Time to Hide How Israel and Iran hid their aircraft

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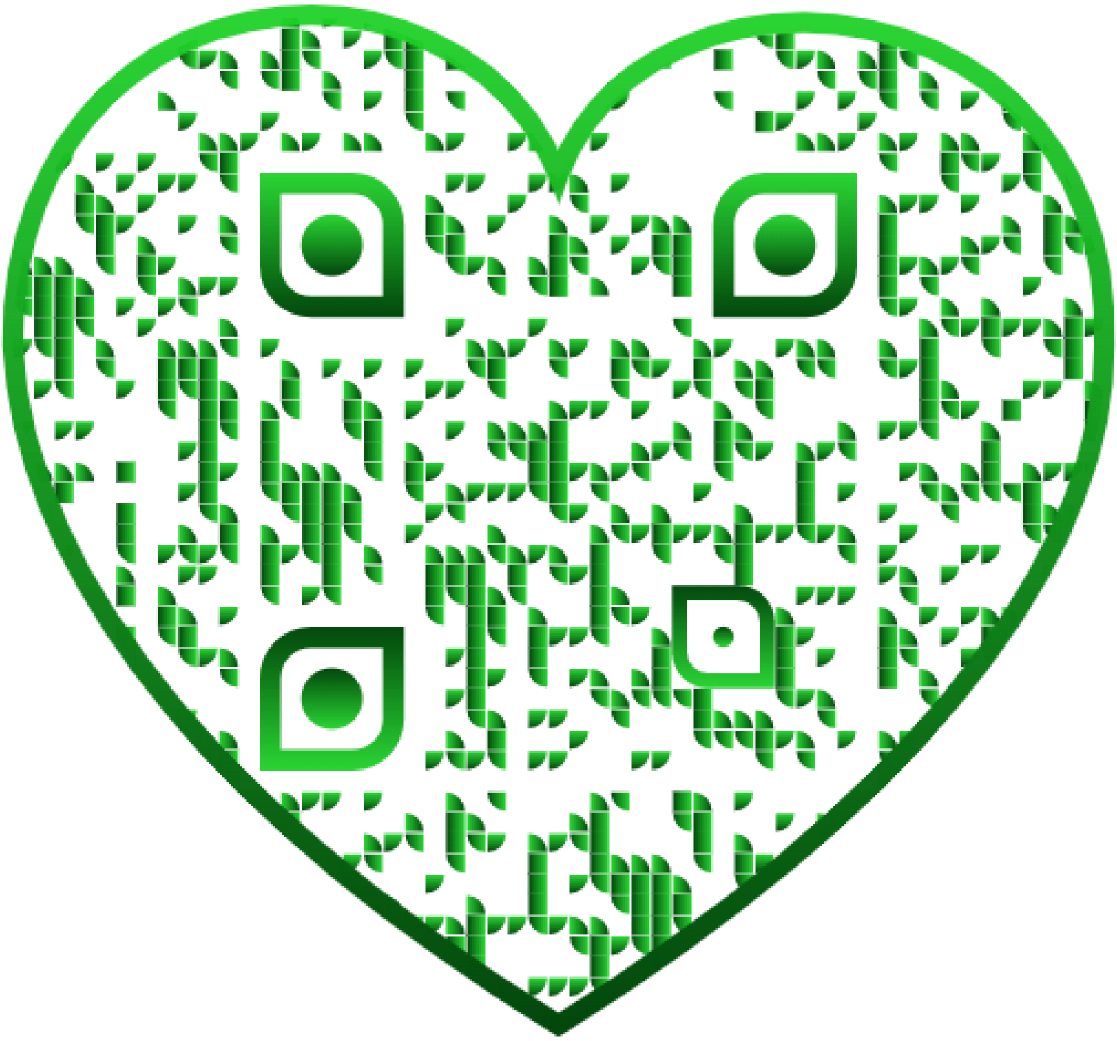

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Comment

Downing the drones – but at what cost?

RAF Typhoons are being tasked to patrol the skies of Poland following the recent Russian drone incursions, but is it cost effective to use a $250,000 ASRAAM to take out a $10,000 drone? *Crown Copyright*

Once again, Vladimir Putin was playing silly games this month. There was the high-profile incursion by Russian drones into Poland that saw Polish F-16s and Dutch F-35As shooting them down. But at what cost? We know an AIM-120 AMRAAM was fired by a Polish F-16C, because it missed its target and hit a residential building (see *Headlines*, p6-7). So the Polish Air Force was firing a $1m beyond-visual-range (BVR) missile to shoot down a $10,000 drone! There are much cheaper solutions out there. The USAF used the Advanced Precision Kill Weapon System (APKWS) laser guided rocket designated the AGR-20, which costs around $30,000, in the Middle East against Iranian drones in 2024 and earlier this year.

Aircrew flying RAF Lakenheath F-15E Strike Eagles, Aviano-based F-16CMs and Spangdahlem F-16CMs have all used the weapon to do just that job at a fraction of the cost. In April, the Aviano-based 555th Fighter Squadron was deployed to RAF Lakenheath to train with not just the AGR-20, but cheaper AIM-9Ms and more than 5,000 rounds of 20mm ammunition to amongst other things, shoot down drones and cruise missiles – all part of the 555th's preparations for deploying to the Middle East this winter.

RAF Typhoons were involved in shooting down Iranian drones earlier this year, and while it's never been officially disclosed what they used, the ASRAAM within-visual-range air-to-air missile was the weapon of choice when the subject was covered on Channel 4's *RAF TopGuns*. An ASRAAM comes at a cost of around $250,000 each.

I'm not saying the missiles shouldn't be used in this way, because stopping kamikaze drones can be a matter of life or death, but surely European air forces should be looking at cheaper methods to stop them? The AGR 20 is one option, but perhaps there is a need to buy a new type of platform – say, a trainer that could be converted into a light attack aircraft easily, with much lower operating costs and that could be armed with a less expensive effector. Is this a topic the NATO Support and Procurement Agency is considering? Or should this be left to individual European air forces to solve?

Whatever the case, surely someone has to be looking at cheaper options to shoot down drones, because this type of warfare is not going away.

Alan Warnes
Editor at Large, *AirForces Monthly*

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COVER – The Polish Air Force will officially retire its Su-22 Fitter fleet on November 31, but is likely to cease flying in mid-October, signalling the end of another Russian type in NATO service *Bartosz Bera*

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Russian drones downed in Poland

Bartosz Głowacki reports on the Russian drone incursions into Poland on September 10/11, that have seen NATO air forces offering support

Polish F-16Cs from Lask Air Base shot down the Russian drones during the night of September 10. The jets are armed with AIM-9 Sidewinders and AIM-120 AMRAAMs – an expensive way to shoot down cheap drones Bartosz Bera

ON THE night of September 10, Russian unmanned aircraft vehicles (UAVs) participating in the attack on Ukraine flew into Poland's airspace from a south-eastern direction. According to the Ukraine Air Force the attack involved a total of 458 Russian drones and cruise missiles (Kh-101s, Kh-59s and Kalibrs). Of that number, 413 of were shot down or suppressed. Ukraine provided Poland with the information about their flight paths.

Most of the UAVs were Gerbera decoy drones – derivatives of the Iranian Shahed UAVs – and their debris were found in over a dozen locations in the eastern and central part of Poland. Photographs and statements indicate the drones did not carry warheads or a reconnaissance payload.

According to Prime Minister Donald Tusk's report to the Polish Parliament, about 20 (according to different sources 19-23) Russian UAVs flew over Poland. The first flew from Ukraine around 2330hrs on September 10 and the last one around 0630hrs on September 11. Some may have flown in from Belarus. The airspace over Warsaw Chopin, Warsaw-Modlin, Rzeszów-Jasionka and Lublin airports was closed till 0630hrs on September 11.

NATO reaction

The Polish Air Force and other NATO allies scrambled aircraft for a quick reaction alert and up to four of the UAVs were shot down, the last one at around 0645hrs. That was carried out by Polish Air Force F-16Cs from the 32nd Tactical Air Base in Łask and Royal Netherlands Air and Space Force's F-35As, based at the 31st Tactical Air Base in Poznań-Krzesiny since the end of August. These were the first such shootdowns over a NATO country.

As the Dutch MoD stated: "Dutch F-35s have intercepted Russian drones over Poland. Within the NATO framework, our F-35s made a significant contribution to the defence of our collective security. This is precisely what we stand ready to do."

The previous alerts when Dutch F-35As were scrambled occurred on

A view of a Gerbera drone as it is being intercepted by a Ukrainian FPV drone this summer. Not all Gerbera drones are decoys – some, including the one shown, are fitted with video surveillance equipment – transmitting real-time video through a radio modem to a ground control unit. *Ukrainian Internet Resources*

the nights of September 2-3 and September 6-7, but no weapons were used.

An AIM-120 AMRAAM missile fired at a drone by a Polish F-16 veered off course and struck a residential building in Wyryki-Wola in the Lublin Voivodeship, destroying the building's roof. The warhead did not explode.

NATO fighters were supported by Italian E-550A CAEW (conformal airborne early warning) aircraft and an Airbus A330 MRTT (multi-role tanker transport) from NATO's Multinational MRTT Unit (MMU). Additionally, German MIM-104 Patriot surface-to-air systems based at Rzeszów-Jasionka airport were placed on high alert and tracked the flight path of the drones.

"When a direct threat appeared, we decided to shoot down the drones that posed the greatest danger," said Tusk. "Anyone who attacks Polish territory must expect an appropriate response. Our stance has full support and understanding in NATO."

Tusk also revealed that during the drone neutralisation operation Polish Mi-24 *Hinds*, Mi-17 *Hips*, UH-60 Black Hawk helicopters and Saab 340 AEW aircraft were also activated.

At the request of the Operational Commander of the Armed Forces Branches, a restriction zone was placed on air traffic in the eastern part of Poland from 2200hrs UTC on September 10, 2025 to 2359hrs UTC on December 9, 2025.

The Russian Ministry of Defence officially denied the UAVs' flight over Poland was intentional, stating that these drones attacked enterprises of the Ukrainian military-industrial complex in the Ivano-Frankivsk, Khmelnytskyi and Zhytomyr Oblasts, as well as the cities of Vinnytsia and Lviv, and all designated targets were hit. It's suspected that one of the goals of the Russian operation was to gather information on NATO-supported Polish air defence systems.

The following week, as part of Exercise Iron Defender at the Ustka training ground, there was the first combat firing in Poland of the Wisła (Patriot) system, utilising the Integrated Air and Missile Defense Battle Command System (IBCS), as well as the Homar A (HIMARS) and Homar K (K239 Chunmoo) rocket launchers newly implemented in the Polish Army.

Operation Eastern Sentry

Following the Russian drone incursions into Poland, NATO Secretary General Mark Rutte and the Alliance's Supreme Allied Commander Europe, Gen Alexus Grynkewich, issued Article 4 of the Washington Treaty declaration on behalf of the Polish government. On September 12, came the launch of Operation Eastern Sentry (or Eastern Sentinel), without a stated end date. Its goal is to significantly strengthen air defence on NATO's eastern flank, especially Poland. This includes the deployment of additional air force assets and ground-based air defence elements, with troops from allied countries in the region. It will provide NATO with the necessary freedom to respond to threats from Russia, including aerial threats, missiles and UAV.

NATO air policing and enhanced air policing detachments are now stationed at Šiauliai in Lithuania (Hungarian Gripens and Spanish Eurofighters), Ämari in Estonia (Italian F-35s) and Mihail Kogălniceanu Air Base, north-northwest of Constanța in Romania (German Eurofighters).

French President Emmanuel Macron stated in social media that he had "decided to deploy three Rafale fighter jets to contribute to the protection of Polish airspace and NATO's eastern flank." Three Rafale Bs from Escadron de Chasse 2/4 'La Fayette' (nuclear strike squadron) landed at 23rd TAB in Mińsk Mazowiecki on September 12. The next day, one of them and a Polish helicopter were scrambled in response to another potential threat from Russian drones. In a separate incident, on September 13, the Romanian Ministry of National Defence announced it had intercepted a Russian drone that entered its airspace.

Meanwhile, NATO continues to strengthen its air defences under Eastern Sentry. Four Luftwaffe Eurofighters stand ready to respond at Laage Air Base in the northeast of that country.

On September 15, three Czech Mi-171Sh helicopters, designated for special operations, from the 22nd Helicopter Air Force Base in Náměští nad Oslavou landed on the eastern border of Poland. Their goal is to support NATO's presence in the region and strengthen the capabilities of the Polish Armed Forces.

On the same day, the UK Government declared that RAF Typhoons will fly air defence missions over Poland as part of Eastern Sentry. The Typhoons would operate out of RAF Coningsby, Lincolnshire, supported by RAF Voyager air-to-air refuelling aircraft from RAF Brize Norton in Oxfordshire. They were expected to start flying missions in the coming days.

Denmark is offering two fighter jets to contribute to air policing and a frigate that can contribute both maritime and airspace surveillance. The specific contribution will be co-ordinated in co-operation with NATO and according to specific operational needs. In addition, radar images will be shared.

Spain is considering transferring some of its assets – two Eurofighters and an A400M – from Lithuania, where they are taking part in the Baltic air policing mission, to Poland to support Eastern Sentry. Italy and Sweden have also signalled they will aid the operation.

Royal Netherlands Air and Space Force F-35As deployed from Poznań-Krzesiny were launched to take down the drones *Bartosz Bera*

Protector first overseas deployment

Protector has been deployed overseas for the first time (library picture) *UK Crown Copyright*

THE RAF began the first overseas deployment of the Protector RG1 (MQ-9B) in September with the start of deployed testing and operator training.

The testing includes delivery to the operating location by transport aircraft, reassembly and air tests. In addition to crew training, software and assurance of capability is also being undertaken.

Although the date Protector will adopt the operational role has not been revealed on security grounds, the MOD did disclose to *AFM* that the transition phase from Reaper (MQ-9A) to Protector is now under way.

Similarly, the location of the deployment has not been disclosed but given the aim of preparing Protector as the replacement for Reaper in an operational role within Operation Shader, the UK's counter-Daesh effort, it is likely to be either at RAF Akrotiri in Cyprus or a base in the Middle East.

XIII Squadron will continue to operate Reaper until its out-of-service date, at which point it will begin the transfer to operating Protector. The first operational deployment will be conducted by 31 Squadron, which will operate forward deployed Protectors from RAF Waddington in Lincolnshire.

BAES QinetiQ trials

BAE SYSTEMS and QinetiQ announced at DSEI 2025 that they had successfully completed synthetic trials to demonstrate how uncrewed aircraft can operate alongside existing crewed platforms to provide a more cost-effective and flexible concentration of combat air power.

The exercise, conducted at BAE Systems Warton site in Lancashire and attended by supportive representatives from the UK Ministry of Defence, brought together synthetic representations of Typhoon, a swarm of QinetiQ Banshee drones and a Malloy T-150 small heavy-lift uncrewed air system together with representative command and control and electronic surveillance capabilities.

The trials served multiple purposes to validate elements including connectivity, interoperability, human-machine interface and goal-based autonomy, using simulated current and operational military datalinks including Link 16.

The trial forms part of the collaborative Project HERA between the two companies and supports the development of future crewed-uncrewed teaming (CUC-T) capability and operations by enabling uncrewed systems to perform dull, difficult and/or dangerous tasks under the control of crewed aircraft. This keeps the pilot and crewed platform out of harm's way and is more operationally effective, while also providing affordable combat mass.

Alan Hart, MD, Science and Technology, QinetiQ, said: "HERA has shown that interoperable autonomous systems can allow dissimilar UAS and crewed aircraft to deliver complex missions. As well as the combinations of technologies employed, the exercise is significant in establishing pan-industry linkages to deliver the sovereign national drone enterprise needed to defend our national interest."

A Typhoon FGR4 with a pair of QinetiQ Banshee drones in Nov 24 *BAE Systems*

The trials will inform other programmes, including the design and development of Tier 2 autonomous collaborative platforms (ACPs) and wider multi-sector interoperability. The ambition for the project is to take this forward into live trials using a Link 16 datalink.

Anthony Gregory, business development director, BAE Systems FalconWorks, said: "Our customers have a growing need to increase combat mass and enhance the lethality and survivability of current platforms through the complementary use of uncrewed air system technology. Together with QinetiQ, we have demonstrated the enhanced operational effect of a crewed and uncrewed force mix."

GCAP developments

FURTHER PROGRESS has been made in the evolution of the tri-nation Global Combat Air Programme (GCAP) with new agreements announced at the DSEI UK 2025 conference in mid-September, regarding the development of engines and sensors, and further airborne testbeds.

The programme remains on course to transition from the existing concept and assessment phase to a full development and design phase by the end of the year. A flying prototype is expected to take to the air in 2030 with the first of the sixth-generation combat aircraft entering service in 2035.

The international consortium developing the power and propulsion system for GCAP has announced a major expansion of its partnership to accelerate development. Comprising Rolls-Royce (UK), Avio Aero (Italy) and IHI Corporation (Japan), the step represents the transition from national contracting to fully integrated international collaboration, laying the foundation for the detailed design and development of GCAP's all-new fighter engine.

Importantly, the move enables the consortium to engage with EdgeWing, the recently formed joint venture of BAE Systems, Leonardo and Japan Aircraft Industrial Enhancement Co (JAIEC), which will act as the prime contractor for the design and development of the GCAP combat aircraft.

The partners claim to have made significant progress on technology development for the demonstrator engine, advancing technologies in additive manufacturing, cooling systems and high-pressure compressor design. Procurement of some hardware has started with a view to commencing initial engine assembly.

Among the recent milestones has been a successful test of a revolutionary combustor developed with enhanced Additive Layer Manufacturing techniques to create unique geometric cooling pathways. The next-generation advanced cooling and material technologies enable higher operating temperatures for the turbine while allowing components to run cooler for extended range to enhance durability and sustainability across the engine's service life.

Phil Townley, director of Defence Aerospace – Future Programmes at Rolls-Royce, said: "This new agreement is a pivotal step – it allows us to move from national programmes to a truly international, one-team approach. By combining our complementary expertise, we're accelerating technology breakthroughs in materials, manufacturing and design that will power GCAP and strengthen the defence industrial base across the UK, Italy and Japan."

For the initial engine demonstrator IHI Corporation is developing the compressor, Avio Aero the low-pressure turbine, and Rolls-Royce has the lead on the combustor, high-pressure turbine and exhaust nozzles.

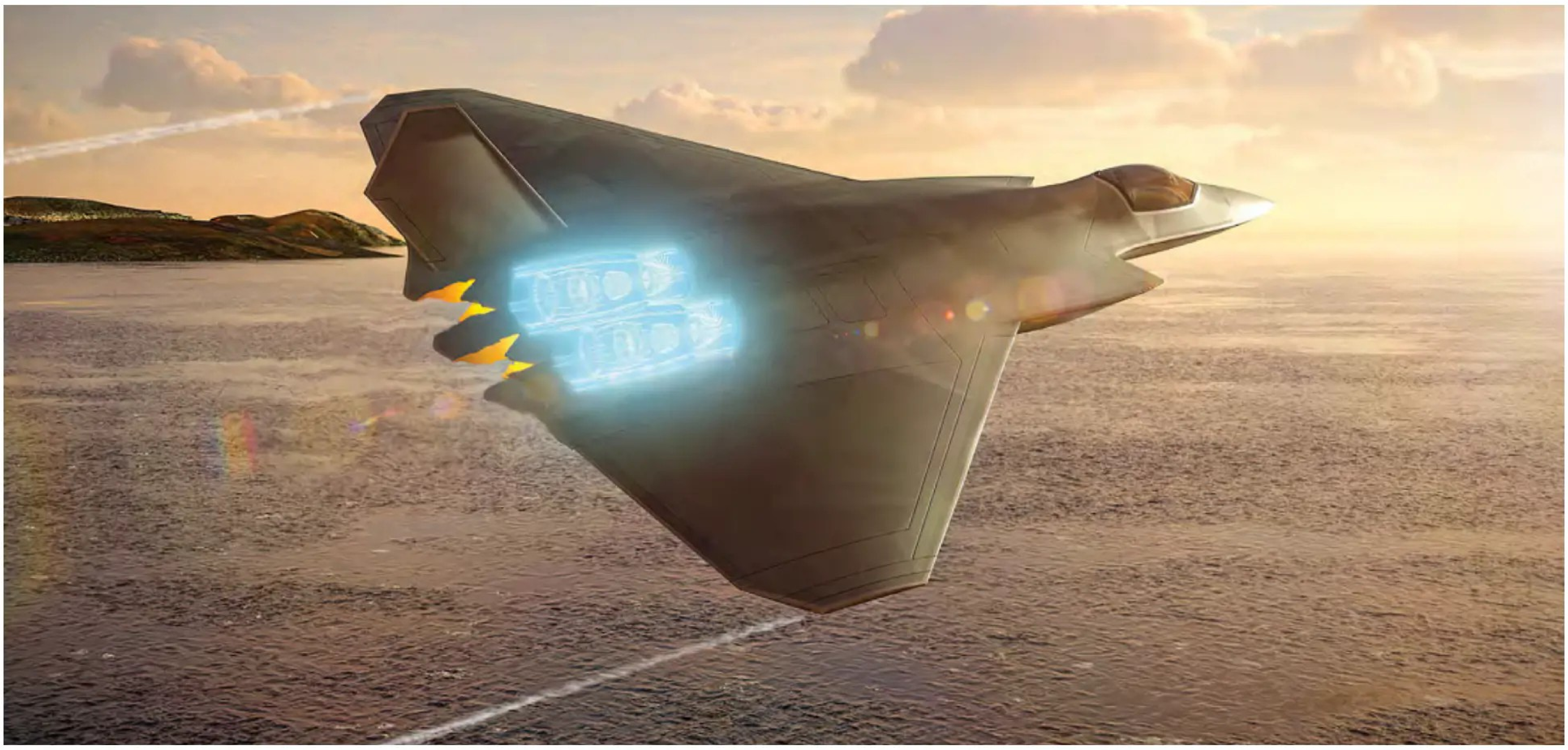
In a similar move, the companies involved in developing the sensor and communication suite for the sixth-generation fighter have formed the GCAP Electronics Evolution consortium (G2E). This will see joint integrated teams working across four areas, with Japan and the UK to jointly lead on radar, and Italy to lead on infrared search and track technology to submit their bids to EdgeWing.

Andrew Howard, Leonardo UK's director of Future Combat Air and G2E interim general manager, said: "Over the last two years we have been working through workshare – of course each of us has corporate and national interests to consider – but we have reached a very good, balanced outcome. Now we are really going to get back to focusing on deep collaboration and engineering together." He added: "We are making very strong progress against the challenges that GCAP is setting us."

Each of the nations will have a one-third stake in the venture – Leonardo and ELT Group (Italy), Mitsubishi Electric (Japan) and Leonardo UK.

The G2E consortium also revealed that each international partner is to use its own airborne testbed. The UK is the first to have a flying integrated testbed in the form of the Excalibur Flight Test Aircraft, a Boeing 757 currently being modified by 2Excel. In due course, both Japan and Italy will field their own testbeds although what aircraft types will be used has not been disclosed.

The testbeds are seen as critical to the development and de-risking of the Integrated Sensing and Non-Kinetic Effects & Integrated Communications Systems (ISANKE & ICS) of the new combat aircraft, the advanced electronics to provide the air crew with mission-critical information and advanced self-protection capabilities.



Artwork showing the engine configuration on GCAP *Rolls Royce*

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USAF E-7s to be converted in the UK

The first E-7A destined for the USAF, serial no 68737 (line no 9274) but wearing civilian registration N4021S, lands at Boeing Field, Washington, on July 15 using callsign 'Boeing 151' *Joe G Walker*

THE ASSEMBLY of the two rapid prototypes of US Air Force E-7 Wedgetail airborne early warning and control (AEW&C) platform is to be undertaken in the UK. This is despite attempts by the Trump administration to cancel the USAF E-7 programme in favour of Northrop Grumman E-2 Hawkeyes and the rapid development of space-based target indication capabilities. The unexpected announcement followed the House of Representatives revealing a proposal to keep the Wedgetail programme alive by continuing rapid prototyping with up to $199.7 million of funding. In addition, a further $200m in unobligated funds would be made available.

The first of the 737-700 green airframes was seen outside Boeing's Renton plant in Seattle in mid-September. In 2026, the two aircraft will transfer to STS Aviation Services in Birmingham to begin conversion to E-7 configuration. As the only active E-7 conversion facility, the move will give Boeing breathing space to re-establish its own E-7 conversion line at Boeing Field.

The STS facility is currently completing the conversion of the second and third Wedgetail AEW1s destined for the RAF, part of a £1.89bn contract with Boeing for the three aircraft. The first aircraft (WT001) departed for testing at MOD Boscombe Down, Wiltshire, in July following a brief appearance at the Royal International Air Tattoo.

UK Defence Secretary John Healey said: "The relationship between the UK and US has never been stronger, and this new deal with Boeing creates and supports hundreds of jobs across the UK, making defence an engine for growth and strengthening our collective security."

Surplus radars

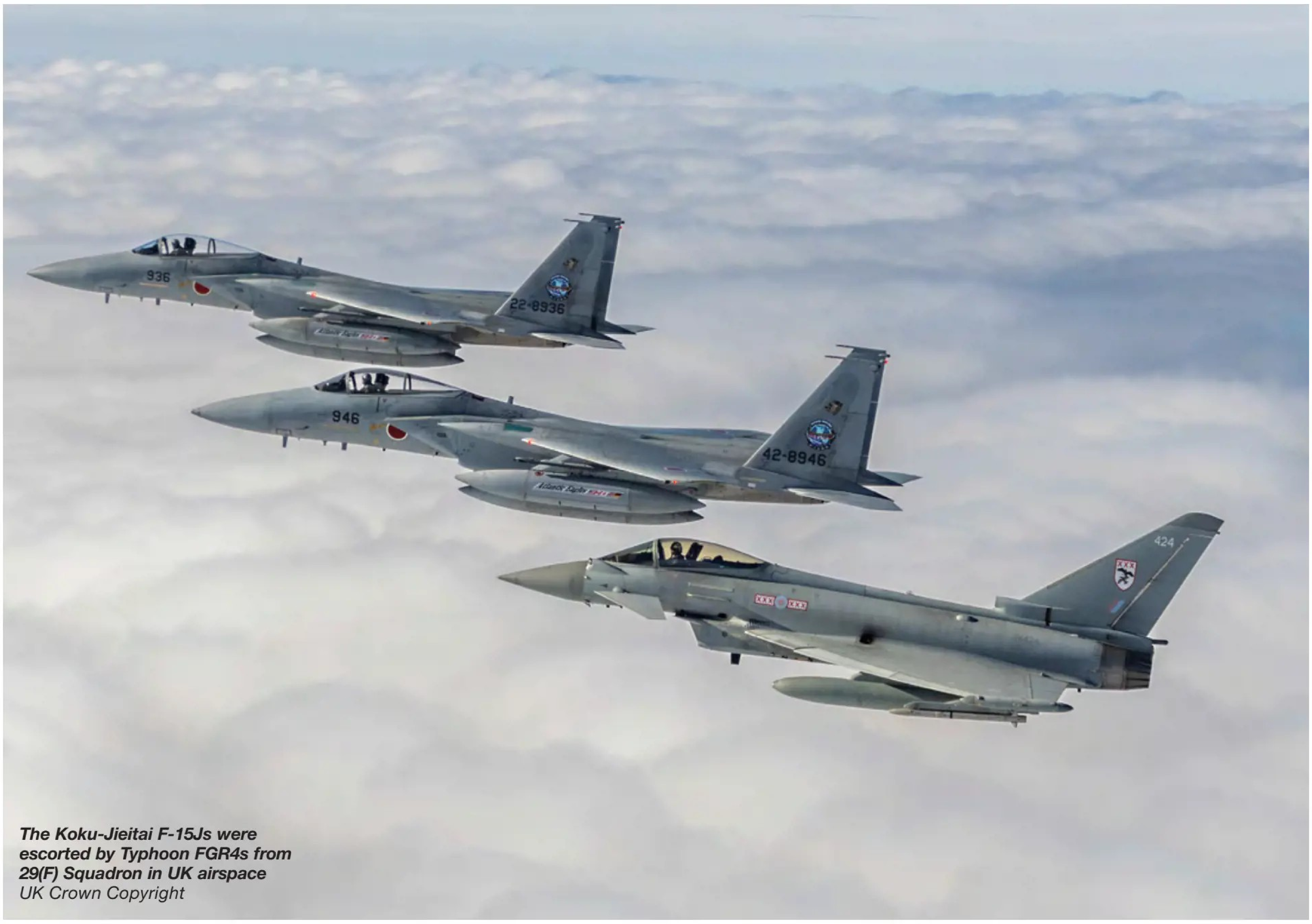
One question that remains unanswered is whether the two rapid prototypes will use the two multi-role electronically scanned array (MESA) radars the UK has on its hands. Having contracted to convert five aircraft for the RAF in 2019, the cutting of the order to three aircraft in the Integrated Review two years later left the UK with two surplus radars.

The 2025 Strategic Defence Review included an aspiration to increase the UK Wedgetail fleet, potentially in conjunction with allies. Although the USAF work will extend the longevity of the STS facility, it is considered unlikely the UK will order more E-7s soon enough to keep it open once the USAF work is complete.

Return of 203 Squadron

Meanwhile, the RAF's penchant for keeping squadron numberplates alive has seen a ground unit at RAF Lossiemouth in Scotland rebadged as 203 Squadron. From July 25, the Poseidon and Wedgetail Engineering Line has become 203 Squadron. Formed from 3 Squadron Royal Navy Air Service in April 1918, the squadron most recently served as the Sea King Operational Conversion Unit at RAF Valley, Anglesey.

An artist's impression of a USAF Boeing E-7A. The programme looked to be dead a few months back after President Trump's thumbs down to the project but two rapid prototypes E-7 Wedgetails to be worked on in the UK mean's there is still life there. *Boeing*



The Koku-Jieitai F-15Js were escorted by Typhoon FGR4s from 29(F) Squadron in UK airspace *UK Crown Copyright*

Japanese Eagles in England

Dylan Eklund reports from a busy RAF Coningsby

THE ARRIVAL of the Japan Air Self-Defense Force (JASDF) at RAF Coningsby will long be remembered by the crowds of enthusiasts who gathered at the Lincolnshire base on September 18. The British weather did it's best to frustrate photographers with dark cloud coverage, but this did not reduce the significance of the first ever visit by Japanese fighters to the UK and Europe.

Dubbed Atlantic Eagles, four F-15J Eagles departed their base at Chitose in northern Japan on September 15, along with three air spares for a transpacific transit to Eielson AFB, Alaska. Supported by

Group photograph taken at RAF Coningsby fronted by RAF Air & Space Commander Air Marshal Allan Marshall and General Morita Takehiro, Chief of Staff JASDF *Crown Copyright*

A sight few would have anticipated in the UK: a pair of F-15Js on an RAF airfield *All images, Dylan Eklund unless stated*

F-15J, 42-8946 lands at RAF Coningsby on September 18, in adverse weather conditions from CFB Goose Bay, Canada *Stuart Haigh*

180 personnel and a mix of air-to-air refuelling tankers comprising a KC-46A, KC-767J and Omega KDC-10. After a night stop in Alaska, four F-15Js departed to CFB Goose Bay before a pair of Eagles flew to the UK.

The deployment to Europe follows a visit to Misawa Air Base by Typhoon FGR4s of 1(F) Squadron in 2016, and participation in recent Pitch Black exercises in Australia. More recently, both of the Royal Navy's Queen Elizabeth-class aircraft carriers made port calls in Japan and conducted joint training in the region.

First to arrive at Coningsby was Kawasaki C-2, 58-1218, on September 17, bringing in ground crew ahead of the arrival of the Eagles (22-8936 and 42-8946) in the late afternoon of the following day. Greeted in UK airspace by Typhoons from 29(F) Squadron, the two fighters in 201 Hikotai markings were hangared soon after their arrival. A second C-2 (28-1216) followed with additional personnel. Of the supporting tankers, the KC-46A (44-3613) and KC-767J (87-3601) landed at RAF Brize Norton, with the Omega KDC-10 positioning to Prestwick, Scotland.

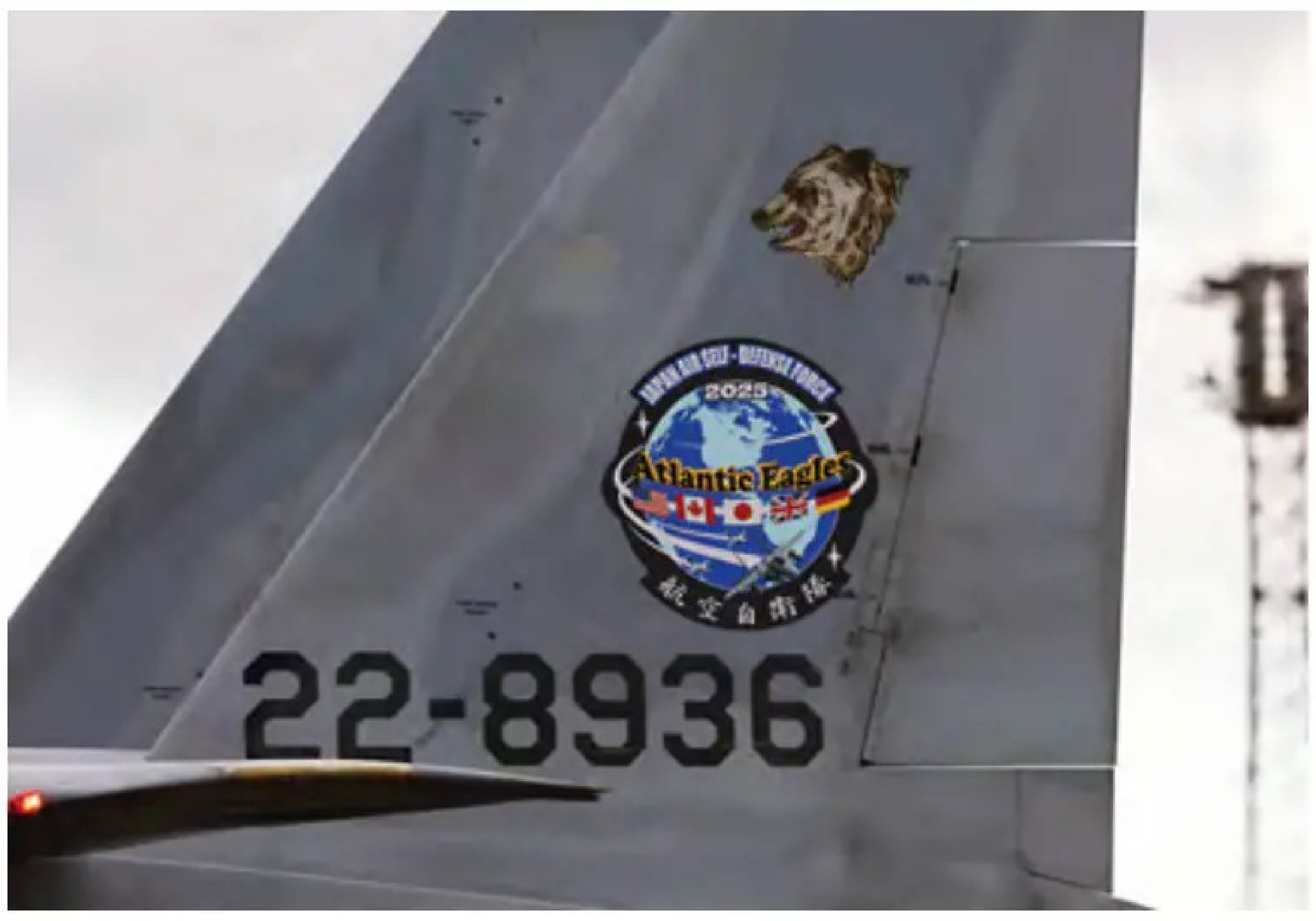
The JASDF aircraft departed to Laage Air Base, Germany on September 23 escorted by a pair of Luftwaffe Eurofighters.

Commenting on the deployment, General Morita Takehiro, Chief of Staff of the JASDF said: “This marks our first fighter deployment to Europe in the 71-year history of the Koku-Jieitai (Japan Air Self-Defense Force). We have named this mission Atlantic Eagles, symbolising our F-15 jets spreading their wings across the Atlantic.”

The General visited Coningsby on September 22 in addition to holding bilateral talks with his RAF and German counterparts.

Chief of the Air Staff Air Chief Marshal Harv Smyth commented: “The arrival of your fighters on UK soil is not only a milestone for the Koku-Jieitai, but also a powerful symbol of how far our partnership has advanced. This is not simply a visit; it is a demonstration of operational trust and shared purpose.”

Last month, the defence ministers of both nations released their first joint statement, acknowledging strengthening relations and defence co-operation reaching new dimensions. Both military leaders emphasised that the security of the Euro-Atlantic and Indo-Pacific regions are interconnected, with the deployment serving to deepen mutual understanding and enhance defence collaboration.



Both F-15Js that visited the UK sported special Atlantic Eagles markings

Kawasaki C-2 28-1216 of 403 Hikotai touches down

Another first was the presence of two C-2s on UK soil together

Serbian air power on show

Igor Salinger watched the military flying across Belgrade in a massive show of air power on September 20

***Two Serbian Air Force MiG-29s with two French Air and Space Force Rafale Bs. With the acquisition of 12 Rafales, the Serbia and French air arms are set to become much closer** All photos, author*

SERBIA STAGED a massive military parade named Power of Unity in Belgrade on September 20, with some 10,000 personnel taking part directly and indirectly, and around 2,500 pieces of weaponry and military equipment showcased. That included more than 600 vehicles, about 70 aircraft and 20 vessels. The parade was officially held to mark the recently introduced Day of Serb Unity, Freedom and the National Flag, but it took place amid what observers have described as Serbia's most serious political crisis since 2000, following ten months of anti-corruption protests by university students and opposition supporters against President Aleksandar Vučić and his government.

The Serbian Air Force (RVIPVO) participation was the largest ever activity since the break-up of the former Yugoslavia. All flying units and most of available aircraft took part, taking off from Colonel-pilot Milenko Pavlović Air Base near Batajnica and appearing in a tight timeframe of some ten minutes at a designated area over Belgrade. It seems to have worked flawlessly despite obvious challenges.

Preparations for the flypast commenced during summer at all three active RViPVO bases, and training over Belgrade started some two weeks before the event, with only a few days of break.

The flypast was led by Serbian Air Force C-in-C General-Major Brane Krnjajić flying in MiG-29UB (9.51), serial 18352. Despite the age of 56, Krnjajić retains his flight currency. Two more formations of three MiG-29s of mixed variants followed. The 101st Fighter Sqn 'Knights' has in its inventory three single-seaters (9.12B) and one two-seater (9.51B) inherited from Yugoslavia and ten aircraft of 9.12A, 9.13 and 9.51 variants donated from Russia and Belarus in 2017 and 2018.

Serbian MiG-29s underwent life-extension programmes with overhauls and avionics updates and are now designated MiG-29SM+, referred to as multirole combat aircraft, rather than a fighter. Upgrades included new target acquisition/fire control N019 radars and integration of an air-to-air and guided air-to-ground weapons carrying capability. On previous occasions, air-to-ground missiles such as the H-29TE (AS-14 *Kedge*) and H-31P (AS-17C *Krypton*) were noted, as well as R-77 (AA-12 *Adder*) and R-27ER1 (AA-10 *Alamo*) air-to-air missiles. The MiG-29 life extension has enabled RViPVO to keep its fighter component aloft and train younger pilots in preparation for new combat type acquisitions, expected to be 12 Dassault Rafales ordered in August 2024, with first deliveries expected from 2028.

Eight J-22/NJ-22 Oraos followed in two four-ship formations, including three examples that apparently underwent a modernisation process, referred to as NJ-22M1As. Despite its sole dedicated ground attack type celebrating its 50th anniversary of the first flight last year, Serbia is pursuing an upgrade process, including locally developed guided weapons. Oraos are operated by 241st Fighter-Bomber Squadron 'Tigers' out of Lađevci Air Base.

A welcome sight was the only tug-towing aircraft in the RViPVO inventory, Super Galeb G-4, serial

Serbian Ministry of Interior Airbus H145M YU-ICE over Belgrade during training flight prior to the parade

Four of the eight Oraos in the flypast. The lead aircraft and left wingman appear to have been modernised to NJ-22M1 standard

Two Mi-35P Hind gunships of the 714th Combat Helicopter Squadron 'Shadows', procured secondhand from Cyprus in 2023

23601, back in the air after being grounded for some time. Brightly painted in its distinctive hi-vi colours, it led a four-ship formation of the type operated by Batajnica based 252 Training Squadron 'River Mouth Wolves'. The same unit also operates Utva Lasta primary trainers, seven of which appeared at the display. Three Utva 75 trainers, used for the pilot selection process, were noted flying in the area but did not join the main flypast.

All three aircraft types operated by 138th Transport Squadron 'Storks' appeared in a 'past and future' display comprising one of two Airbus C295MW transports delivered in 2023, the sole remaining Antonov An-26 delivered in 1984 and a Piper Pa-34 Seneca used in training and the photogrammetry role.

Unlike fixed-wing aircraft, most helicopters in the display have been relatively recently introduced. Those included a total of ten Serbian Air Force Airbus H145Ms of various variants, nine Mi-35M and Mi-35P gunships and eight SA341/342 Gazelles in basic and GAMA armed version. Leading the helicopter flypast was H145M, serial 14531, one of a second tranche of D3 variants, painted in distinctive national flag colours, defined as military VIP due to its passenger configuration and operated by 890th Combined Helicopter Sqn 'Pegasus'. Also appearing were three Mi-17V5 *Hip* helicopters of five delivered between 2016-2019 to the same unit, as well as three veteran Gazelles still used in pilot training. The H145M combat variants, dubbed H-50B locally, are operated by 119th Combined Helicopter Squadron 'Dragons' at Niš Air Base.

Lađevci-based 714th Anti-Armour Helicopter Squadron 'Shadows' is the SAF unit that has expanded the most in the last five years, receiving 11 helicopters. Four new Mi-35Ms were introduced in early 2020, making a giant leap from the light armed Gazelle GAMAs, while another six Mi-35Ps out of 11 purchased secondhand from Cyprus were received last year.

The Serbian Ministry of Interior Helicopter Unit sent one Airbus H145M (YU-ICE) and two H215 Super Pumas (YU-HHJ and YU-OPS), all sporting military-style three-tone camouflage, in what appeared to be closest formation among rotorcraft. The unit operates a total of four H145M and three H215s, alongside other types including the Kamov Ka-32, Bell 212 and Gazelle.

Near the end of the parade, a combined formation of two Serbian Air Force MiG-29s and two French Air and Space Force Dassault Rafale B fighters appeared over Belgrade, symbolising the RVIPVO's future and the forthcoming co-operation between Serbia and France. Two aircraft are said to have flown in directly from Saint-Dizier-Robinson, operated by Escadron de Chasse 1/4 'Gascogne', both accompanying Serbian MiG-29s from the QRA carrying R-77 (AA-12 *Adder*) missiles, making the first operational public appearance of this weapon since its introduction to the inventory.

On the ground, the biggest draws in the Serbian Armed Forces display were undoubtedly the Precise & Universal Launching System (PULS) long-range artillery system and Hermes 900 UAV. Both are understood to be part of large-scale defence deals with Elbit. The first contract, worth $335 million, for the supply of PULS launchers and rockets and Hermes 900 UAS equipped with advanced payloads was announced in November 2024. A much larger deal, worth $ 1.6 billion was awarded in August 2024 to deliver a range of defense solutions, including "a broad-spectrum of unmanned reconnaissance and loitering aerial combat systems, from operational to tactical ranges, including personally operated drones" over a five-year period. Although Elbit did not disclose its European customer, on both occasions Israeli media identified Serbia as the customer.

Airbus H145M (YU-ICE) and two H215 Super Pumas, YU-OPS and YU-HHJ, of the Serbian Ministry of Interior Helicopter Unit

An AIM-9L/M Sidewinder short-range air-to-air missile (AAM) is launched by an ex-Dutch UkrAF F-16AM during the Russian combined missile/drone attack on the night of September 19-20 – when 579 drones and 32 Kh-101 ALCMs were launched. The F-16s claimed most of the 29 Kh-101s downed that day. *UkrAF Command*

Increasing drones and KABs

Vladimir Trendafilovski provides an update on the latest trends in the Ukraine-Russia war

WHILE PEACE efforts to end the conflict stalled in September, the situation on the frontline in Ukraine remains unchanged. In an attempt to further expand its territorial gains in Ukraine, Russia continued exerting pressure along the entire frontline, disregarding significant losses in personnel and materiel.

The aviation elements of both countries continued their standard tasks, ranging from supporting the ground elements on the frontline with guided and unguided weapons, launching air-launched cruise missiles (ALCMs) against high-value targets located well behind the frontline, and, last but not least – intercepting various drones and missiles over the territory under their control. The latter is especially true for Ukraine, which is forced to use all available means – including but not limited to the fighters operated by the Ukrainian Air Force (UkrAF).

Finally, Russia continued launching the infamous 'KABs' (standard iron bombs converted into guided glide bombs by adding an UMPK wing kit) and Shahed-series kamikaze drones, terrorising and killing civilians across Ukraine, while Ukraine continued to strike military and industrial targets (primarily oil and weapons production facilities) deep inside Russia.

Russian threats on the rise

As predicted earlier (see *No changes on the front line*, October 2025, p14-16), the Russian Aerospace Forces (RuAF) have now stabilised the number of KAB sorties to the optimum level for its strike fleet consisting of Su-24 *Fencer* and Su-34 *Fullback* aircraft.

By September 25, a total of 3,946 KABs were dropped (627 of these on Russia's Kursk Oblast – where Ukraine still holds a token portion of territory), or a daily average of 158. This suggests that the RuAF will probably maintain the optimum level of 150-170 KABs a day in September, the total figure being in the 4,500-5,000 range and not exceeding the one achieved in August (5,210 KABs). Just as earlier, incidents involving KABs hitting civilians near the frontline continued – the most serious one being at Yarova (Donetsk Oblast), on September 9 – when at least 25 people were killed and 18 injured when a KAB struck a pension collection point.

In September, the RuAF again began to terrorise Zaporizhzhia (capital of Zaporizhzhia Oblast – only 35km from the frontline) with KABs. Starting on the night of September 21-22, ten long-range KABs struck targets throught the city, causing civilian casualties.

Ukraine attacks Crimea-based targets

Starting from late August, the Main Directorate of Intelligence of the Ministry of Defence of Ukraine (HUR MOU) began a series of drone attacks aimed against various Russian ground-based air defence (GBAD) systems and aviation assets stationed in the Russian-occupied Crimea Peninsula.

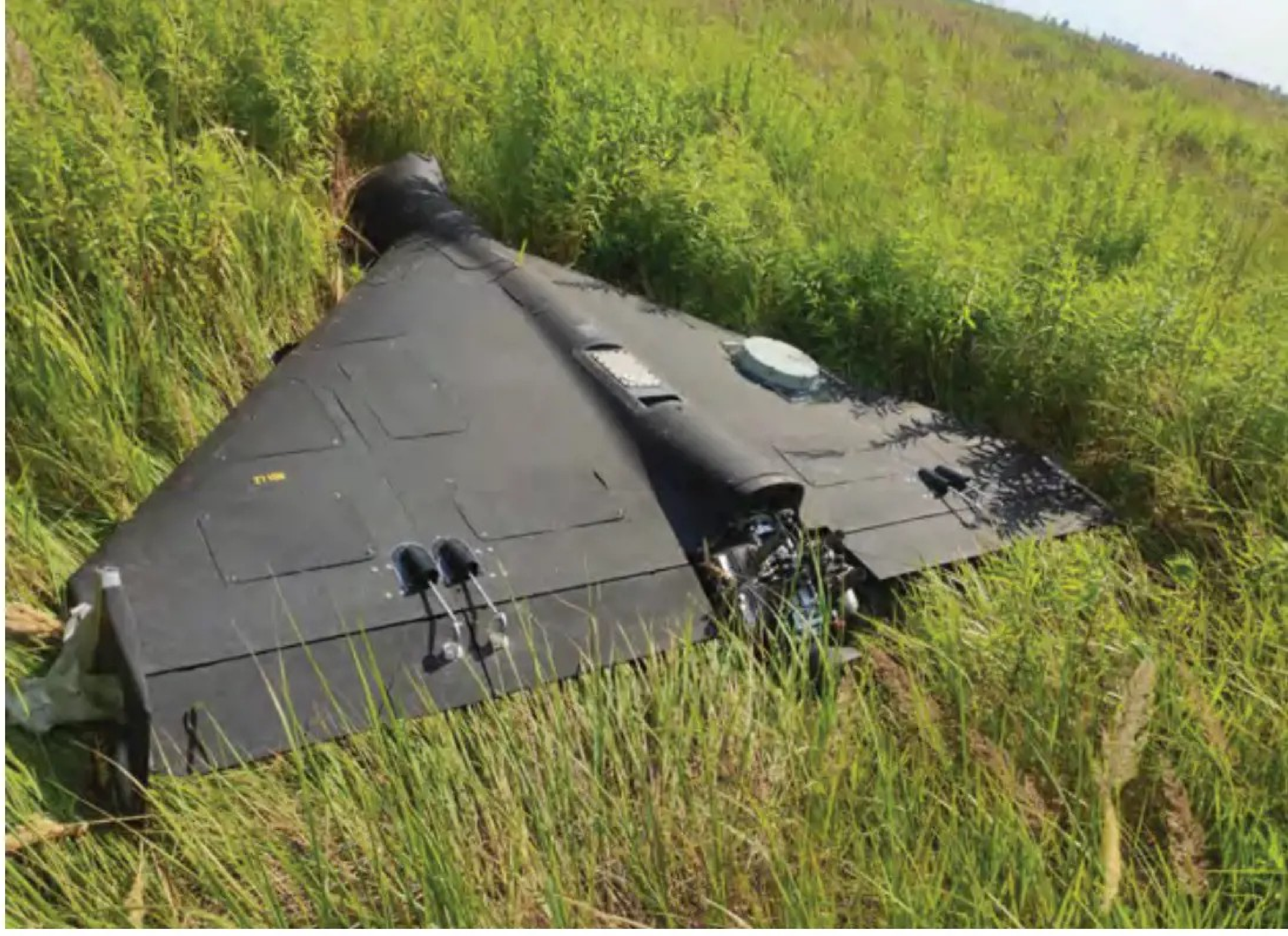
In addition to numerous high-value GBAD systems and associated radars, at least four attacks were made against aviation assets. The first one was on August 30 at the Simferopol International Airport, claiming two Mi-8 *Hip* transport helicopters (one is believed to have been destroyed, while the other one remains unconfirmed). The second one was on September 21 – three Mi-8s were claimed – two at the Russian Border Guards facility at Shkilne, 8km (5 miles) northwest of Simferopol International Airport and one at Simferopol International Airport itself (only one at Shkilne has been confirmed so far). Finally, the third and fourth one were at Kacha Air Base, home of the 318th Separate Composite Aviation Regiment (OSAP) of the Russian Navy (RuN). The first attack at Kacha occured on September 22, when two Be-12 *Mail* amphibians and a Mi-8 were claimed but so far none have been confirmed. The second attack at Kacha was on September 24 and two An-26 *Curl* transports were claimed – one of which was confirmed as destroyed. Notably, the videos released by HUR MOU show that the Mi-8 and the An-26s appeared to be operational, while the Be-12s were non-operational stored aircraft. Last but not least, the Ukrainian Navy reported on August 22 that it attacked Khersones Air Base near Sevastopol, destroying up to two Forpost and three Mohajer-6 surveillance drones of the RuN.

КРИМ, УКРАЇНА
УРАЖЕННЯ ПЕРШОГО МІ-8

This Mi-8AMTSh combat transport helicopter was struck by an FPV drone and is believed to have been completely destroyed at the Simferopol International Airport on August 30. *HUR MOU*

The Be-12N ('08 Yellow') seen during the FPV drone attack on September 22, at Kacha Air Base. It has been stored for decades – note the absence of propellers. A second identical aircraft was also hit that same night. *HUR MOU*

An-26 ('30 Blue'/RF-46878) is seen here moments before an FPV drone struck it on September 24 at Kacha Air Base. Despite having no propellers, the aircraft is one of a few operational aircraft of the type in service with the local 318th OSAP and was either undergoing regular maintenance or service life extension. The video shows that it was set ablaze and destroyed in the attack. *HUR MOU*



The most numerous Geran-2 variant is the Y-series – the drone with serial number Y27166 being seen here after crashing near Boryspil (Kyiv Oblast) in August. It has a prominent circular 16-channel jam-resistant Kometa satellite navigation antenna – the best (and largest) variant known to be in use so far. *Ukrainian Internet Resources*

Latest update on Russian Shahed-series drones

New versions of the Geran-2 kamikaze drone (a Shahed-136 clone, built at the Yelabuga drone plant in Tatarstan, Russia) were identified by early September. The first of these is the so-called Yer-series (its serial beginning with the Russian 'hard sign' letter, also known as the 'Yer') – fitted with a camera in a ball-shaped pod below its nose and a pair of stick-shaped radio antennas – one on top of each of its wingtips. This variant is capable of transmitting video in real time via a Chinese-built radio modem which can be used for real time reconnaissance, as well as for remotely-guided pin-point attack by a human operator. Unfortunately, an intact example has yet to be recovered. Two further versions are identified as E-series and ER-series – supposedly local variants of the MS-series (see *Russia increases drone attacks*, September 2025, p16-19) with a camera fitted in the nose cone itself but pictures and more details on these have yet to surface. The ER-series is reportedly the jet-powered variant, based on the Geran-3.

In September, the HUR MOU revealed the data it had gleaned from a Geran-3 captured intact after it had crashed earlier that month. Known as the U-series (its serials having the U prefix) of drones built at Yelabuga, it is an equivalent of the Iranian-designed Shahed-238 based on the local mass-produced Shahed-136 version, the Y-series, with over 32,000 built, based on the serials found on recovered remains. The Geran-3 is fitted with a Chinese Telefly JT80 turbojet engine, providing a flight speed of 300-370km/h and an operational range of up to 1,000km. The highest serial noted so far by mid-September was U-346, suggesting that Geran-3 is still in a low-volume production – presumably due to limited availability of components.

These attacks continued until the morning of September 25 when at approx. 04:00hrs local time a RuAF Su-34 on a bombing mission against Zaporizhzhia was downed by the UkrAF – presumably by one of its Western surface-to-air missile (SAM) systems, waiting in ambush.

On the other hand, the number of kamikaze drones (Shahed-136 clones and derivatives, plus various decoy drones that emulate these) has seen a significant increase. By the morning of September 26, a total of 4,831 drones were launched (of these 4,163 or 86% were downed or crashed), exceeding the total for August (4,132 drones). While it is highly unlikely that the total monthly figure would exceed the record set in July (6,297 drones), it is certain that it will be in the top three monthly results so far – possibly exceeding the second highest result from June (5,438 drones). According to UkrAF statistics, at least half of the drones launched each day are kamikaze drones – the rest being decoys.

A new daily drone record was established on the night of September 6-7 – during the largest Russian combined drone/missile attack so far – affecting multiple regions across Ukraine, including its capital Kyiv. In addition to 13 ground-launched missiles, a total of 810 drones were also launched that night – 747 of them being downed or crashed. In addition to damage caused to civilian infrastructure and residential areas, at least five civilians were killed and over 40 were injured.

The RuAF also took active part in combined missile/drone attacks – launching Kh-101 (AS-23 *Kodiak*) ALCMs from strategic bombers on three occasions. According to Ukrainian sources, during one of the attacks which took place on the night of September 2-3, a number of Tu-160 *Blackjacks* involved in it developed technical difficulties and were forced to abandon their mission.

Finally, by September 25 Russia deployed a total of 145,487 various first-person view (FPV) kamikaze drones against targets on the frontline. With a daily average of 5,819 it is likely that a new monthly record will be established in September, beating the one set in August (150,126 drones).

Edwards welcomes second Raider

Airmen with the 412th Test Wing's 912th Aircraft Maintenance Squadron prepare to recover the second B-21A following its arrival at Edwards AFB on September 11 *USAF/Kyle Brasier*

TESTING OF the Northrop Grumman B-21A Raider bomber at Edwards AFB, California, is being expanded following the arrival of a second bomber on September 11. Its arrival enhances the service's capacity to conduct comprehensive testing and sustainment training, expanding testing capabilities beyond initial flight performance checks and enabling the commencement of mission systems and weapon integration testing phases, marking a significant step toward the bomber's operational readiness.

According to the Secretary of the Air Force Troy Meink: "We can now expedite critical evaluations of mission systems and weapons capabilities, directly supporting the strategic deterrence and combat effectiveness envisioned for this aircraft."

Air Force Chief of Staff Gen David Allvin commented: "Addition of a second B-21 to the flight test program accelerates the path to fielding. By having more assets in the test environment, we bring this capability to our warfighters faster, demonstrating the urgency with which we're tackling modernisation."

All three of the initial B-21A main operating bases will see extensive military construction projects launched in 2026. Ellsworth AFB, South Dakota, will be the first base set to receive operational B-21 aircraft, and construction is already progressing on numerous infrastructure projects to ensure readiness when the Raiders arrive.

Maryland retires its Warthogs

A-10C 79-0104 breaks away during a low pass over Martin State Airport in Maryland after making its final take-off from the base. The Warthog was flown to Selfridge Air National Guard Base where it was turned over to the Michigan ANG's 107th Fighter Squadron *Maryland Air National Guard*

THE FINAL pair of A-10Cs assigned to the Maryland Air National Guard's 175th Wing departed from Warfield Air National Guard Base at Martin State Airport near Baltimore on September 23. Their departure means Maryland is the only US state without an Air National Guard (ANG) flying mission. Plans to transfer the District of Columbia ANG's 121st Fighter Squadron to Maryland, although approved by the USAF, were overturned by the White House.

Maryland's 104th Fighter Squadron had operated the Thunderbolt II since receiving the first A-10As direct from the factory in 1978. The unit had conducted nine combat deployments over the past 25 years, and most recently it supported Operations Inherent Resolve, Spartan Shield and Poseidon Archer in 2024.

The final pair of Warthogs was flown to Selfridge ANGB, Michigan, where they were assigned to Michigan ANG's 107th Fighter Squadron. Whereas the wing's 175th Operations Group, 175th Maintenance Group and their subordinate units were all inactivated, the 104th FS will transition to a cyber mission. The squadron was first formed in 1921 and was the first to fly the newly upgraded A-10C into combat in 2007, when it deployed to Al Asad Air Base, Iraq.

One day earlier, A-10C 79-0087 was flown across the state to Hagerstown Regional Airport, where it joined the growing collection at the Hagerstown Aviation Museum. The museum is housed within the former Fairchild Republic flight test hangar, where more than 700 A-10s were delivered to the USAF. Founded by Sherman Fairchild in Farmingdale, New York, in 1925, Fairchild Aircraft moved to Hagerstown in 1931. Then known as Fairchild Hiller, it acquired Republic Aviation in 1965 and formed Fairchild Republic in 1972.

Red Devils deploy to Japan

MARINE FIGHTER Attack Squadron VMFA-232 flew to MCAS Iwakuni in Japan on September 8 in support of the Unit Deployment Program (UDP). Upon arrival, the 'Red Devils' replaced the VMFA-214 'Black Sheep', marking the end of the first F-35B squadron mission under the UDP program. During its deployment, the squadron, which is normally based at MCAS Miramar in California, is assigned to the 1st Marine Aircraft Wing's Marine Aircraft Group MAG-12. VMFA-214 had been deployed from MCAS Yuma, Arizona, to Iwakuni since March 8.

Left: ***An F/A-18C assigned to VMFA-232 taxis to the flight line following its arrival at Marine Corps Air Station Iwakuni, Japan, on September 8, 2025*** *US Marine Corps/LCpl Erick Reyes*

Reserve units prepare for inactivation

HH-60Ms from Company C, 7th Battalion, 158th Aviation Regiment receive a water-cannon salute following their return from their final at Butts Army Airfield at Fort Carson, Colorado, on September 14, 2025 *Greg L Davis*

THE US US Army Reserve Command's aviation units have begun preparations for inactivation, with several units conducting their final formation flights. 1st Battalion, 158th Aviation Regiment conducted its last UH-60L formation flight on August 15. Known as the 'Ghost Riders' it is one of two assault helicopter battalions assigned to the reserve command. Although officially based at Conroe-North Houston Regional Airport, the battalion has been operating from David Wayne Hooks Memorial Airport near Tomball while its facilities were being upgraded.

The final flight for the 8th Battalion, 229th Aviation Regiment 'Flying Tigers' followed at Godman Army Airfield at Fort Knox, Kentucky, on September 12.

The units are among four USARC battalions that will be inactivated, in accordance with the Army Transformation Initiative (ATI). Company B, 7th Battalion, 158th Aviation Regiment carried out a farewell flight over Kansas City on September 7. The 'Spartans' operates Boeing CH-47F Chinook helicopters from Aviation Support Facility Loathe at the New Century AirCenter. Based at Joint Forces Training Base Los Alamitos, California, Company G, 7th Battalion, 158th Aviation Regiment conducted its last formation flight on September 16. Known as 'Southern California Dustoff', the unit operates the UH-60L. The 5th Battalion's Company A flew its final flight on September 23, when the 'Ghostriders' UH-60Ls departed from Gray Army Airfield at Fort Hood, Texas.

Company C, 7th Battalion, 158th Aviation Regiment bid farewell to the HH-60M variant of the Black Hawk on September 14. Known as the 'Saint Dustoff', the unit operates from Butts Army Airfield at Fort Carson, Colorado. The 7th battalion headquarters is located at Fort Hood, Texas.

Known as the 'Devil Ray Dustoff', Company G, 5th Battalion, 159th Aviation Regiment flew a farewell formation around Tampa Bay, Florida on August 18. The air ambulance company operates the HH-60M from facilities at MacDill AFB. The 5th Battalion headquarters is located in Newport News, Viriginia, at Joint Base Langley-Eustis-Fort Eustis. In accordance with ATI EXORD 222-25, the reserve aviation units will be deactivated by September 15, 2026.

Last Liberty retired

THE LAST MC-12W Liberty aircraft assigned to the Oklahoma Air National Guard's 137th Special Operations Wing was retired at the Will Rogers Air National Guard Base in Oklahoma City during a ceremony held on August 2. The Air Force Special Operations Command-aligned wing's 188th Special Operations Squadron had flown the intelligence, surveillance and reconnaissance aircraft since July 2015. During ten years of operations, the squadron's 13 MC-12Ws and crews logged 50,725 flying hours and 2,501 combat and combat-support sorties across six locations outside the continental US. Based on the Beechcraft King Air 350ER twin-engine turboprop, the MC-12W first entered USAF service in 2009 and was initially developed to support the Global War on Terror (GWOT) in Iraq and Afghanistan, eight months after funding for their purchase was approved in July 2008. The 137th SOS is now tasked as the formal training unit for AFSOC's new OA-1K Skyraider II.

The final MC-12W in USAF service receiving a water cannon salute during an informal retirement ceremony at Will Rogers Air National Guard Base, Oklahoma City, on August 2, 2025
US Air National Guard/SSgt Caitlin Carnes

Intel aircraft retired

Three RC-12X Guardrail aircraft pass through a water cannon salute at the conclusion of their official final flight at Camp Humphreys *US Army/Pfc Hong Jae Chun*

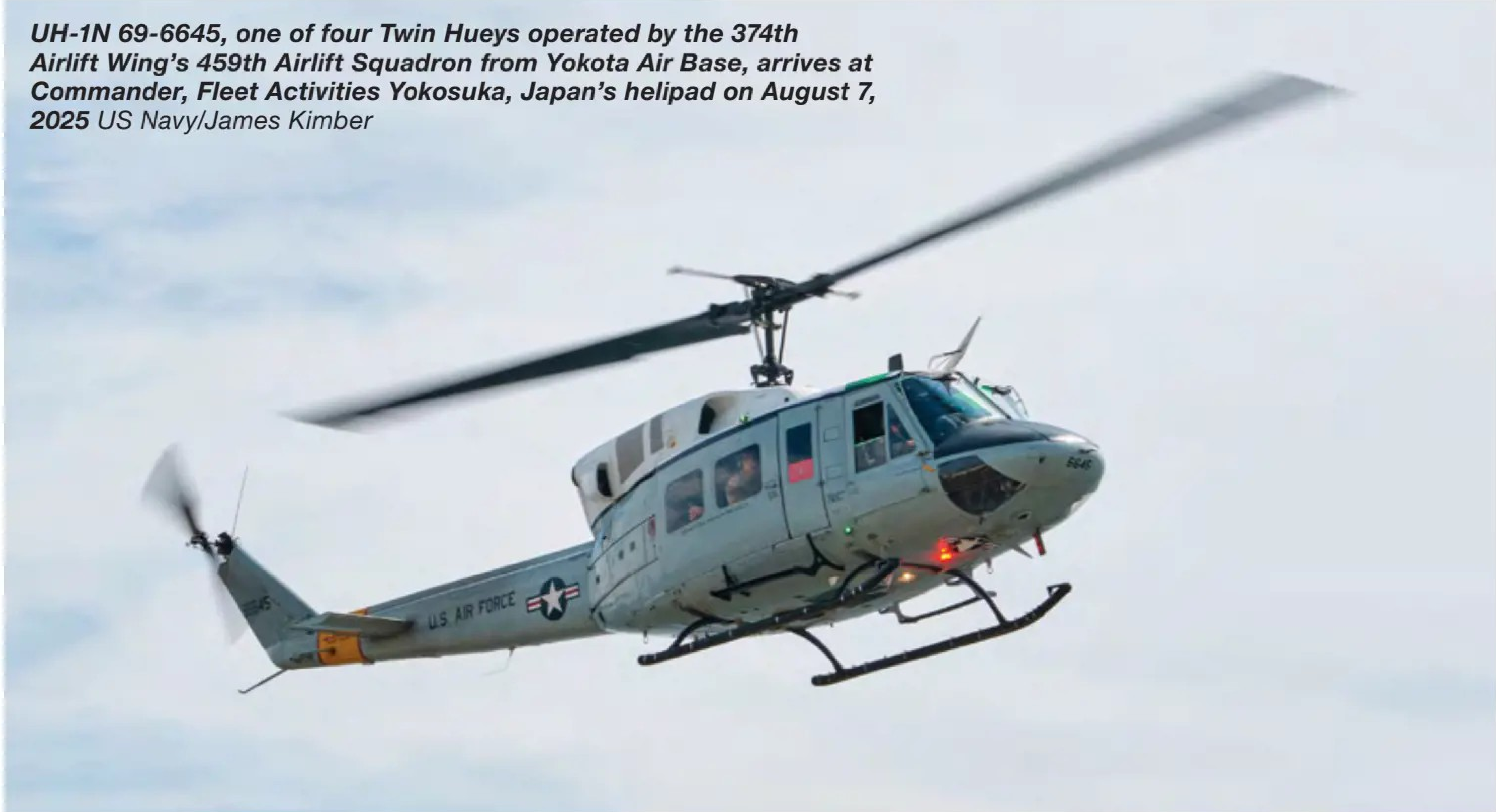
THE 501st Military Intelligence Brigade's 3rd Military Intelligence Battalion (MIB) (Aerial Exploitation) conducted a retirement ceremony for its four RC-12X Guardrail and one RC-7B Airborne Reconnaissance Low (ARL) airborne intelligence, surveillance, and reconnaissance (AISR) aircraft at Camp Humphreys, Republic of Korea, on July 31. The formal final flights saw the aircraft depart from and return to Desiderio Army Airfield. This event marked the end of a 50-year mission for Guardrail and more than 29 years for the ARL from Korean bases. The two aircraft were operated by 3rd MIB's Alpha and Bravo Companies. The US Army is phasing out its propeller-driven AISR platforms in favour of newly developed jet-powered platforms based on the Bombardier Global Express aircraft that will deliver increased capabilities and reduce vulnerability.

NASA acquires Sea Rangers

IN JULY 2025 NASA acquired eight former US Navy TH-57B Sea Rangers that were previously operated by Training Air Wing TAW-5 from Naval Air Station Whiting Field, Florida. The helicopters will be used for astronaut training, assigning them to the agency's Lyndon B. Johnson Space Centre (JSC) at Ellington Field. Operations are expected to begin in mid-2026. The last examples of the Sea Ranger in US Navy service were flown by Helicopter Training Squadron HT-28 at Whiting Field and made their final flight on September 19. Their retirement marks the conclusion of the US Navy's acquisition program for the Boeing/Leonardo TH-73A. NASA will reportedly use the helicopters for Crew Resource Management training.

Centaurs retire Twin Hueys

THE 459th Airlift Squadron conducted a formal final flight with its Bell UH-1N helicopters at Yokota Air Base, Japan, on August 30. The unit, a component of the 374th Airlift Wing, retired the Twin Hueys without a replacement, marking the end of a 45-year mission in Japan. The UH-1Ns were first assigned to Yokota in 1980 and supported a range of utility missions, including passenger, light cargo, and VIP airlift, medical evacuations, and search and rescue. Plans to replace them with new MH-139A helicopters were cancelled several years ago when the USAF reduced its planned procurement of the Grey Wolf.



UH-1N 69-6645, one of four Twin Hueys operated by the 374th Airlift Wing's 459th Airlift Squadron from Yokota Air Base, arrives at Commander, Fleet Activities Yokosuka, Japan's helipad on August 7, 2025 *US Navy/James Kimber*

Blackhawks leave Bahrain

THE US Navy's Helicopter Mine Countermeasures squadron HM-15 Detachment 2A flew its final MH-53E mission from its base at Bahrain International Airport in Manama on August 31. The Blackhawks had operated the forward-deployed detachment since February 2003, when it assumed responsibility from HM-14. The squadron had been tasked with Airborne Mine Countermeasures (AMCM), VIP transport, and Vertical Onboard Delivery (VOD) missions. HM-14 initially activated its own detachment to support the US Fifth Fleet in 1999. The US Navy will retire its remaining Sea Dragon minesweeping helicopters in 2027.

Thailand orders A330 MRTT+ and H225Ms

AIRBUS
ACM PUNPAKDEE PATTANAKUL
JEAN BRICE DUMONT

Thai Air Chief Marshal Punpakdee Pattanakul signing the agreement to buy the A330MRTT+ with Jean Brice Dumont, head of air power at Airbus Defence and Space *Airbus*

A SIGNING ceremony was held at Getafe, Spain, on September 25, 2025, to confirm an order for a single Airbus A330 Multi Role Tanker Transport Plus (MRTT+) for the Royal Thai Air Force. The following day, a contract for two Airbus Helicopters H225Ms for Thailand was also announced.

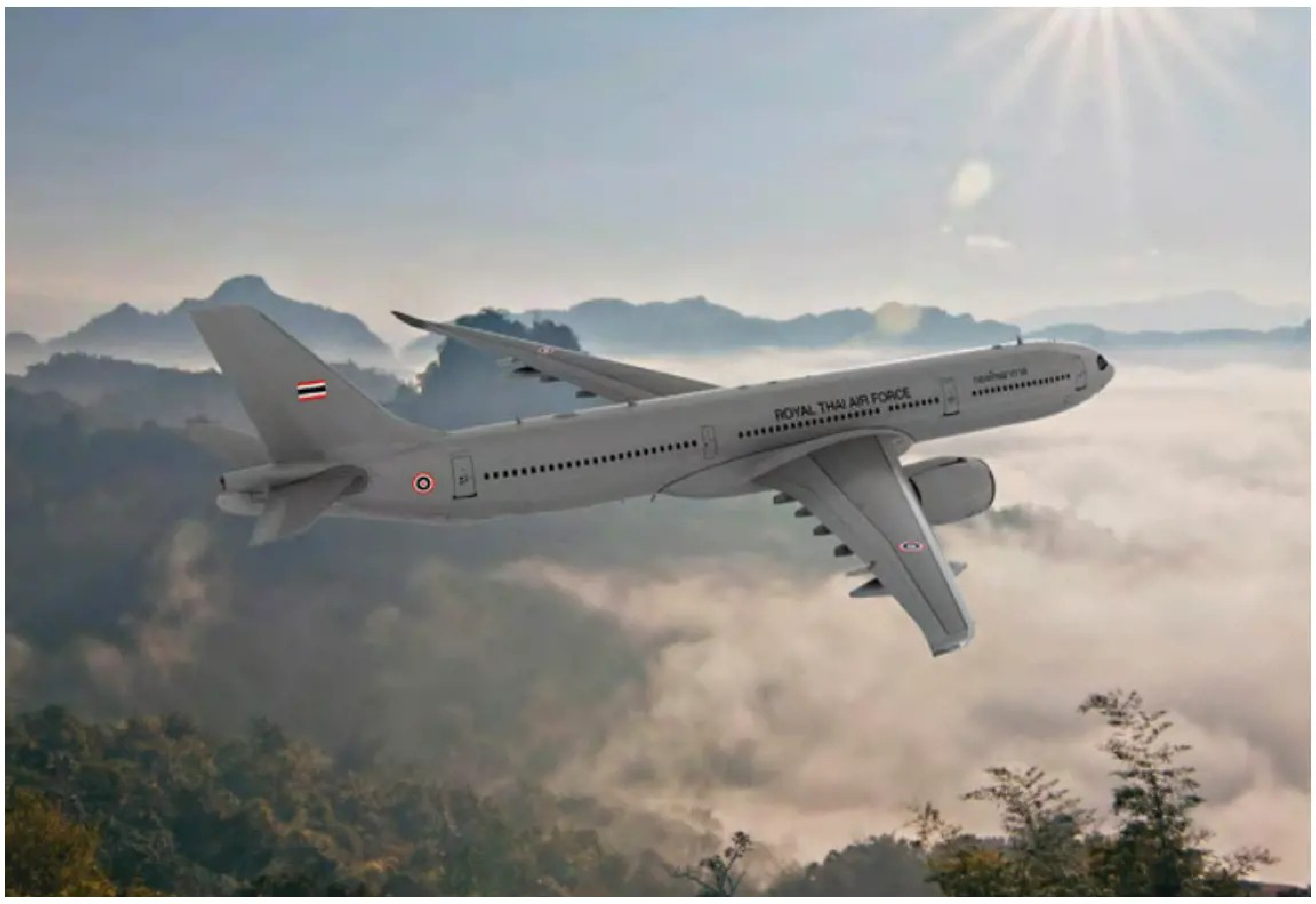
Thailand's A330 MRTT+ will be equipped with a flying boom and hose and drogue pods, allowing it to refuel both the Lockheed Martin F-16 Fighting Falcons and Saab JAS 39 Gripens that form the bulk of the Royal Thai Air Force's high-end combat capability. Thailand has also opted to acquire the Airbus Medical Evacuation kit solution that can be installed in the tanker-transport, as well as a VVIP cabin configuration, to increase the number of roles it will be able to perform once in service.

The aircraft will be built as a 'green' A330-800 airframe and delivered to the A330 MRTT Centre in Getafe during 2026. Following configuration as a MRTT+, it is expected to be delivered to the Royal Thai Air Force in 2029.

The order for the A330 MRTT+ makes Thailand the launch customer for the latest version of the tanker-transport, which is based on the current, in-production A330neo family. It is likely to join 602 Squadron, the VIP unit. According to a source in Thailand, Prime Minister Anutin Charnvirakul tasked the RTAF to select a VIP aircraft for him, but the widebody airliner was rejected. They then went back with a new proposal to buy a tanker as a VIP transport with an increased budget that Parliament approved.

The two H225Ms will be configured for search and rescue (SAR) and emergency medical services (EMS) operations for the Royal Thai Air Force. The air arm received 12 H225Ms from 2015, having placed an initial order three years earlier, with other batches contracted for in 2018 and 2021. The fleet is operated by 203 Squadron and used for a number of roles, including combat search and rescue, general SAR and supporting the army, including the transport of troops.

Air Chief Marshal Punpakdee Pattanakul, commander-in-chief of the Thai air arm since October 2023, said: "The addition of these two new helicopters, will specifically be designated for SAR and EMS."



An artist's impression of the RTAF A330 MRTT+ that will be used for tanking, medevac and VIP use *Airbus*

Saudi Arabia and Pakistan sign defence pact

SAUDI ARABIA and Pakistan signed a mutual defence pact on September 17, aimed at strengthening their security partnership. The Pakistani prime minister's office said afterwards: "The agreement states that any aggression against either country shall be considered an aggression against both."

The treaty comes as the Middle East becomes increasingly wary about the reliability of the United States as an ally. The Royal Saudi Air Force and Pakistan Air Force regularly exercise together, with the former sending six Tornados to PAF Base Mushaf for the two week Exercise Indus Shield in October 2024. The PAF also attended exercises in Saudi Arabia.

Pakistan is a Muslim-majority nation and also fields the Islamic world's largest army. Pakistani state television showed Prime Minister Shehbaz Sharif and Saudi Crown Prince Mohammed bin Salman, the kingdom's de facto ruler, embracing after signing the agreement. Pakistan's army chief, Field Marshal Asim Munir, regarded as the country's most powerful person was also present.

Pakistan's decades-old alliance with Saudi Arabia – the site of Islam's holiest sites – is rooted in shared faith, strategic interests and economic interdependence. Pakistan has long had soldiers deployed in Saudi Arabia, currently estimated at between 1,500 and 2,000 troops, providing operational, technical and training help to the Saudi military. That includes assistance to the Saudi air and land forces. Saudi Arabia has loaned Pakistan $3 billion to shore up its foreign exchange reserves, a deal extended in December 2024.

The signing of the agreement comes just four months after Pakistan and India almost went to war (see *Understanding the Rafale kills*, October, p43-58).

Chilean Navy sells last Bell 206 helicopter

THE CHILEAN Navy's last Bell 206B Jet Ranger III helicopter is being sold. The Bell 206s have been a significant part of the fleet since the 1970s. During this time, the Jet Ranger, also known as the UH-57B, played a pivotal role in pilot training, coastal patrol, aeromedical evacuations, logistical support, search and rescue, and humanitarian aid missions. It covered the entire national territory, including extreme areas such as the Chilean Antarctica. Throughout its service life, the Bell 206s accumulated approximately 52,000 flight hours.

The sale was open to the general public and interested parties were able to inspect the aircraft and its spare parts at the Valparaíso Naval Base between July 21 and August 1. Bids were required to be submitted on September 1 at the Navy Supply Directorate.

Initially, the Navy acquired four Bell 206 units for its HS-2 antisubmarine squadron, as they could launch MK-44 torpedoes. Over time, more were introduced to the fleet, including helicopters from the Army and one from Brazil in 2019, totalling eight.

The Navy recently transitioned to the Airbus H125 platform as part of the 'Gaviota Project', with the acquisition of five Airbus H125 helicopters which will enhance capabilities, including search and rescue, medical evacuation, maritime law enforcement, passenger transport, and logistics support.

Bell 206B Jet Rangers

Argentine Air Force acquire third Embraer 140

The Embraer 140 on the runway at El Palomar Airport *Argentine Air Force*

ON THE night of August 29, the third Embraer ERJ 140 LR landed at the El Palomar Airport in Argentina. The commercial and military airport is home to the 1st Air Brigade of the Argentine Air Force.

The aircraft, c/n 145634, was built in 2002 and at that time was operated by American Eagle with serial number N835AE. After being withdrawn from service, it was put up for sale. The Argentine Air Force already had two and was interested in purchasing a third. The sale was so certain to go ahead that the air force painted the aircraft in Argentine colours and assigned the serial number T-97. Unfortunately, lack of resources prevented its purchase at that time. That has now been rectified, and the aircraft has been given the serial T-94 and named '*55 Heroes*' in honour of the 55 members of the Argentine Air Force who fell in the South Atlantic War.

FARD incorporates its fourth AW169

THE DOMINICAN Republic Air Force (FARD) has received its fourth and final Leonardo AW169 helicopter, following the signing of a purchase contract in March 2023. The aircraft, FAD-3080, joins the three previously delivered: FAD-3078, FAD-3079, and FAD-3081.

The twin-engine helicopter is designed to carry two crew members and ten passengers. Its propulsion system, based on two Pratt & Whitney Canada PW210A1 turboshafts, allows it to reach up to 144kts with a maximum flight range of 424nm, or fly for up to four hours. The models delivered are configured for passenger transport, but will also be used for fast rope operations to insert specialised personnel in boats or terrain to carry out inspections and prevent the commission of crimes, C-SAR missions, and patrols at sea.

The AW169s will be operational in the 'Águilas' Rescue Squadron, based at the San Isidro Air Base.

The FAD-3080 arrived after a ferry flight from the United States, after 16 Dominican pilots and eight technicians completed a training program in Philadelphia, in collaboration with Leonardo Helicopters.

FARD receives its fourth AW169 helicopter

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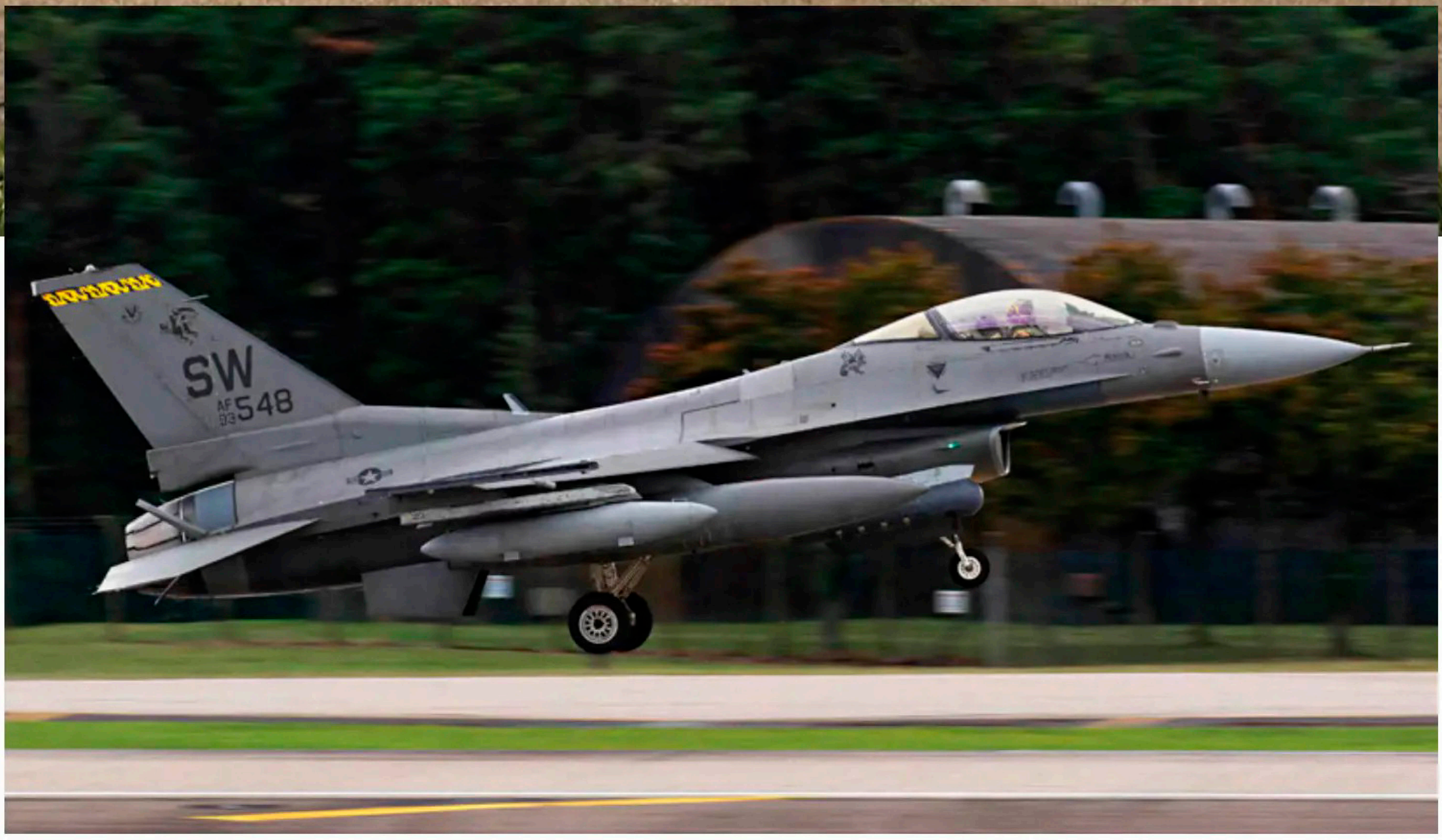
Just Passing Through

Ben Stanley Hall showcases the rich diversity of aircraft movements up and down the UK

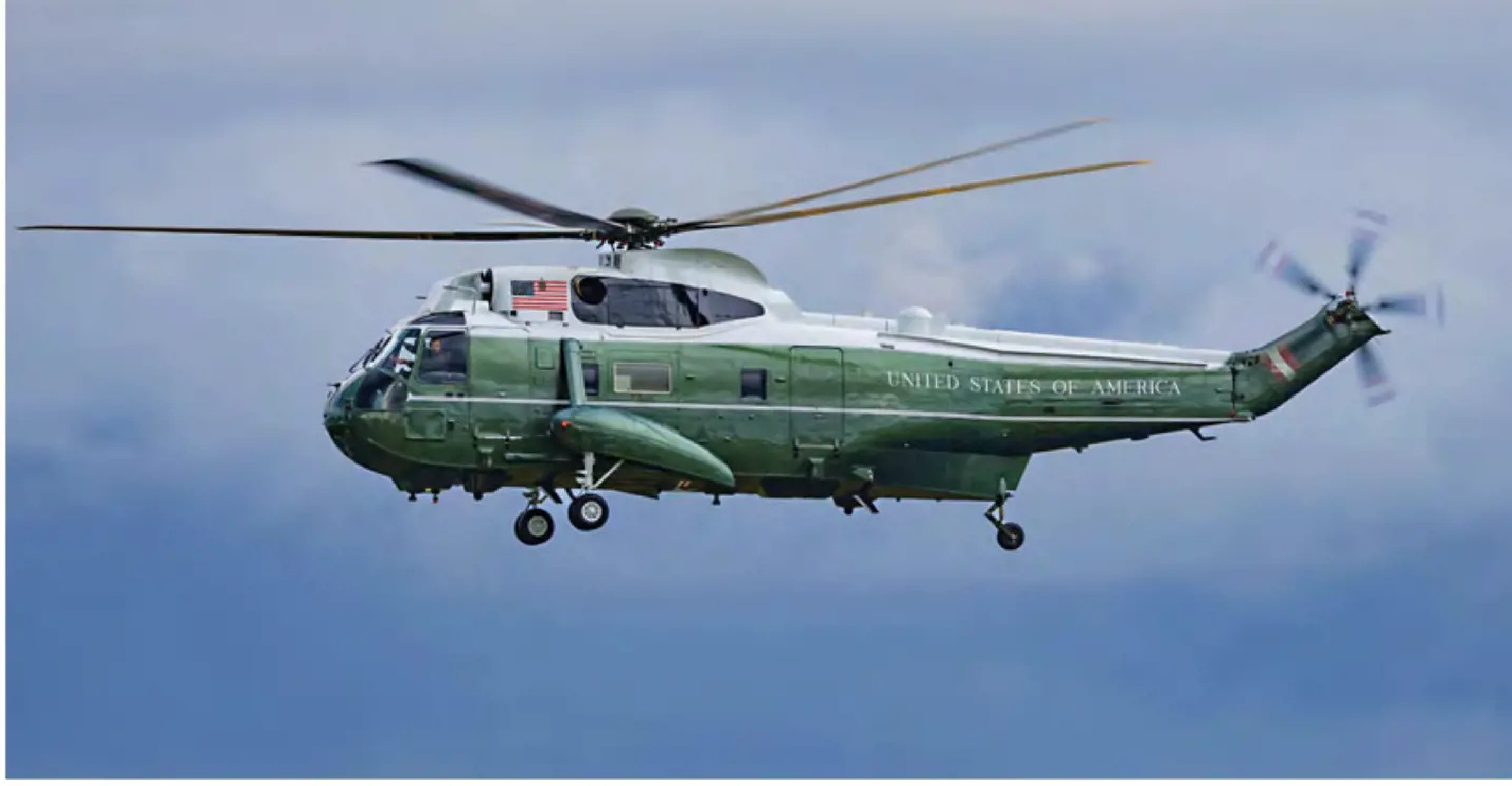
UNITED STATES NAVY
51

Another busy and varied month in the UK with numerous deployments, detachments and exercises going on simultaneously. As usual, we have tried to steer clear of the major exercises, which still leaves us with fighters, maritime patrol and VIP transport in both fixed and rotary wing forms, as well as more traditional transport and carrier onboard transport.

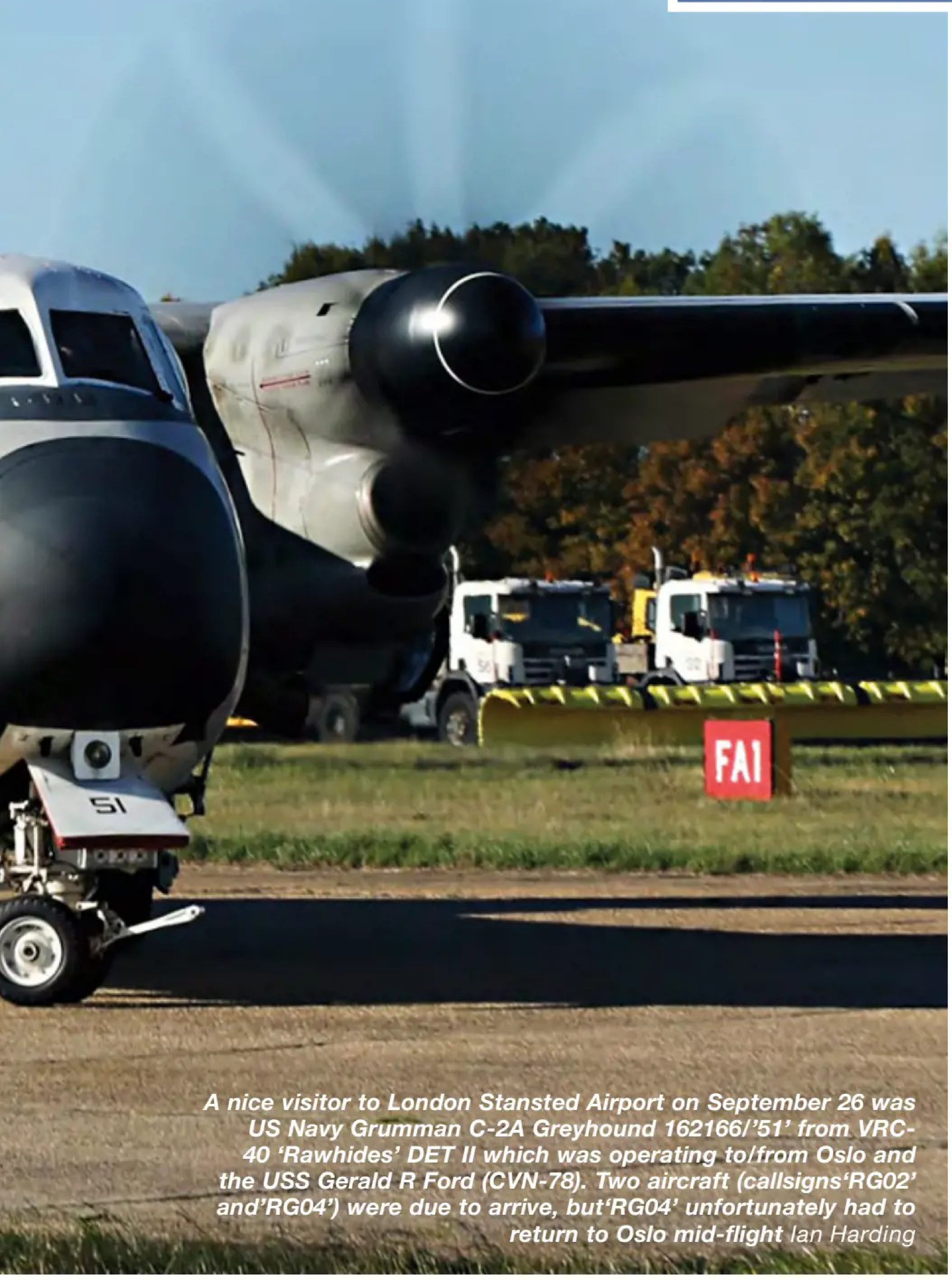
We welcome contributions from readers across the world. If you photograph an aircraft that is not in its usual location or could be of interest, please email your images, without watermarks, to ben.hall@keypublishing.com using the subject heading 'Just Passing Through', with a short caption including as much information as possible **afm**



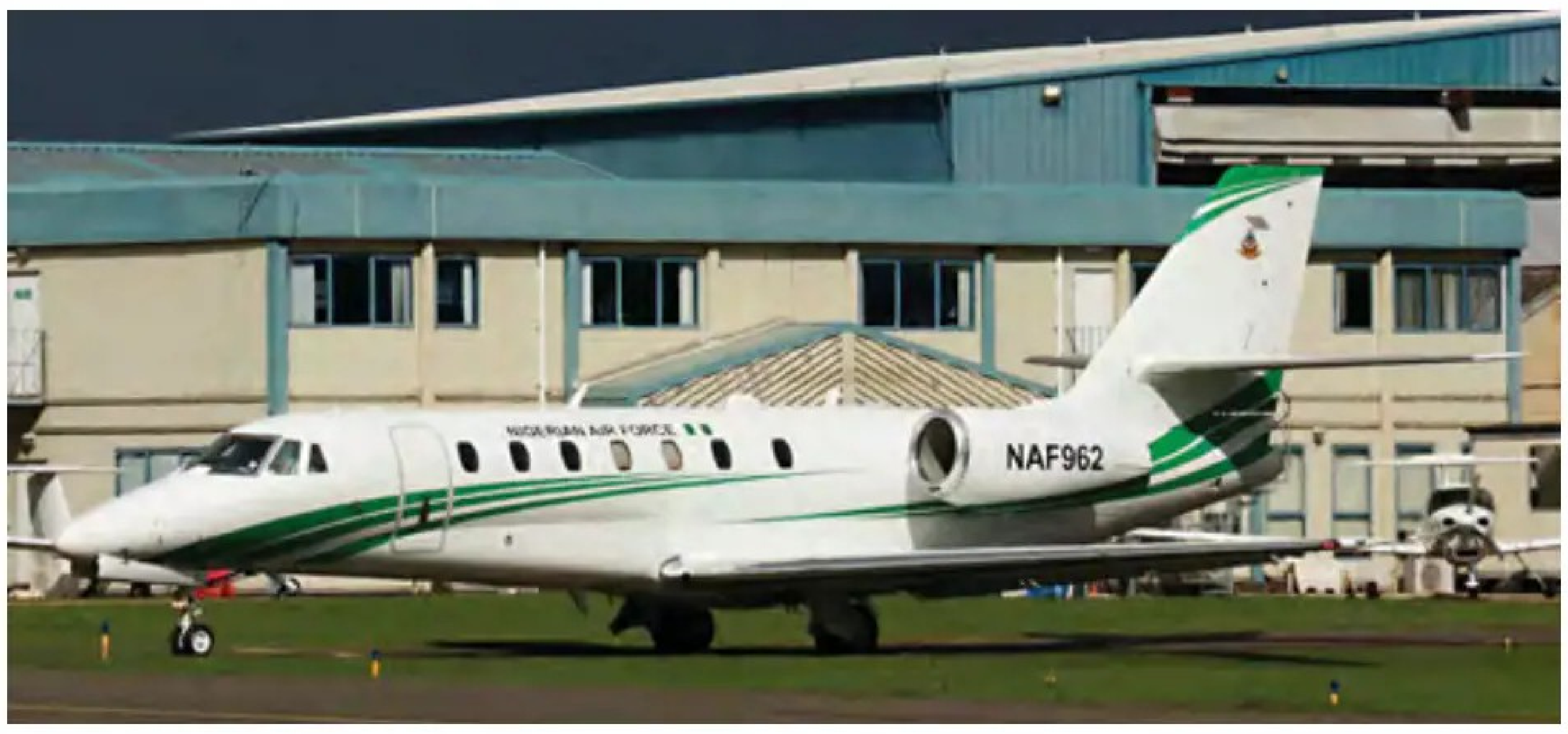
TABOR45, an F-16CM, 93-0548/'SW' from the USAF's 79th Fighter Squadron part of the 20th fighter Wing at Shaw AFB, South Carolina, is seen touching down at RAF Lakenheath on September 16, after a flight from Aviano, Italy. This aircraft was accompanied by a second F-16CM, serial 94-0041, after the pair encountered maintenance issues en route back home from a deployment to the Middle East Jay Carter



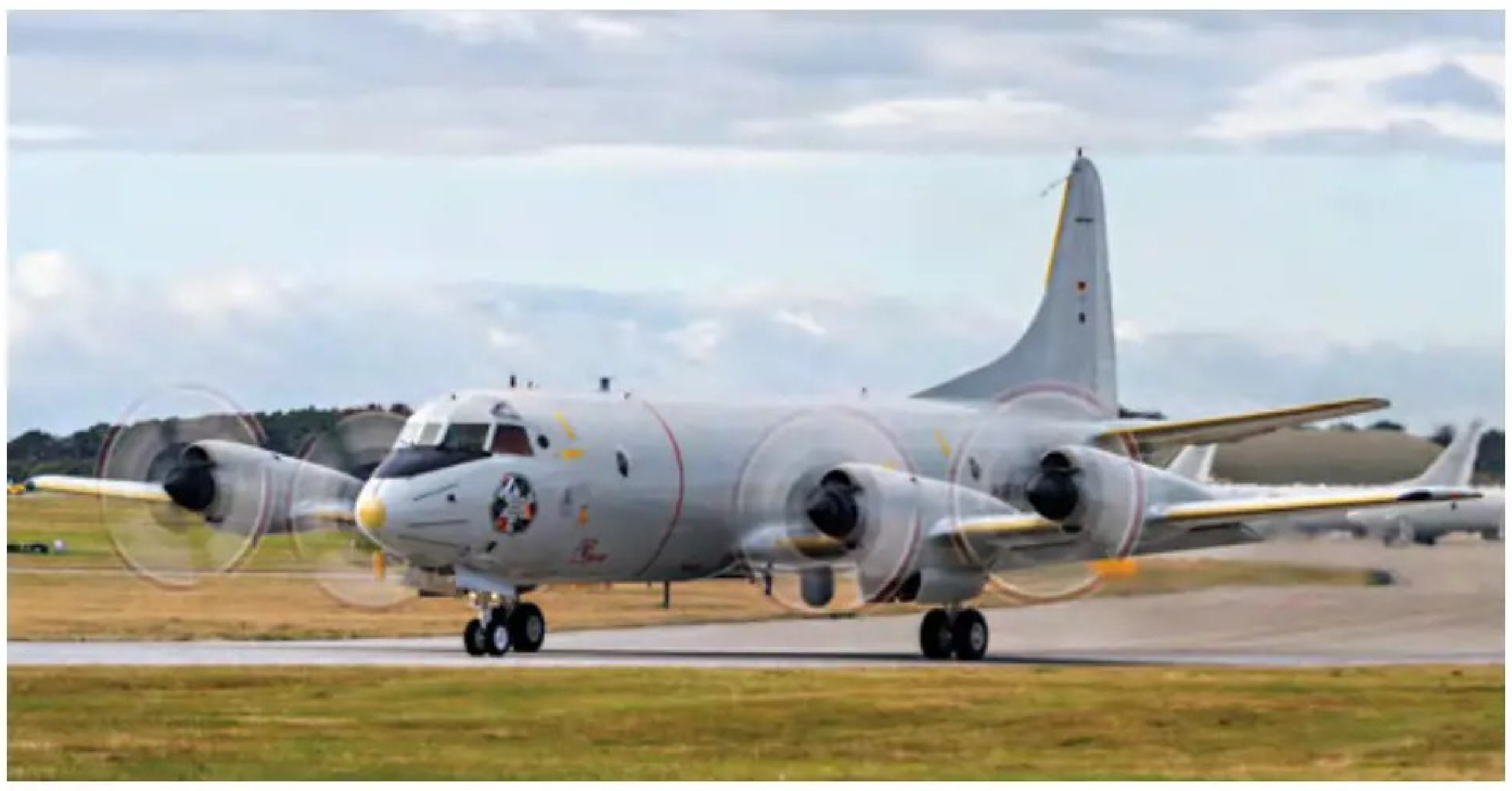
Seen leaving RAF Northolt on September 12 is VH-3D 159357 of HMX-1, on a dry run to Regent's Park, Stansted, Windsor and Chequers ahead of US President Donald Trump's state visit to the UK the following week. It was accompanied on this flight by a police helicopter, another VH-3 and three CH-47 Chinooks *Paul Darlow*



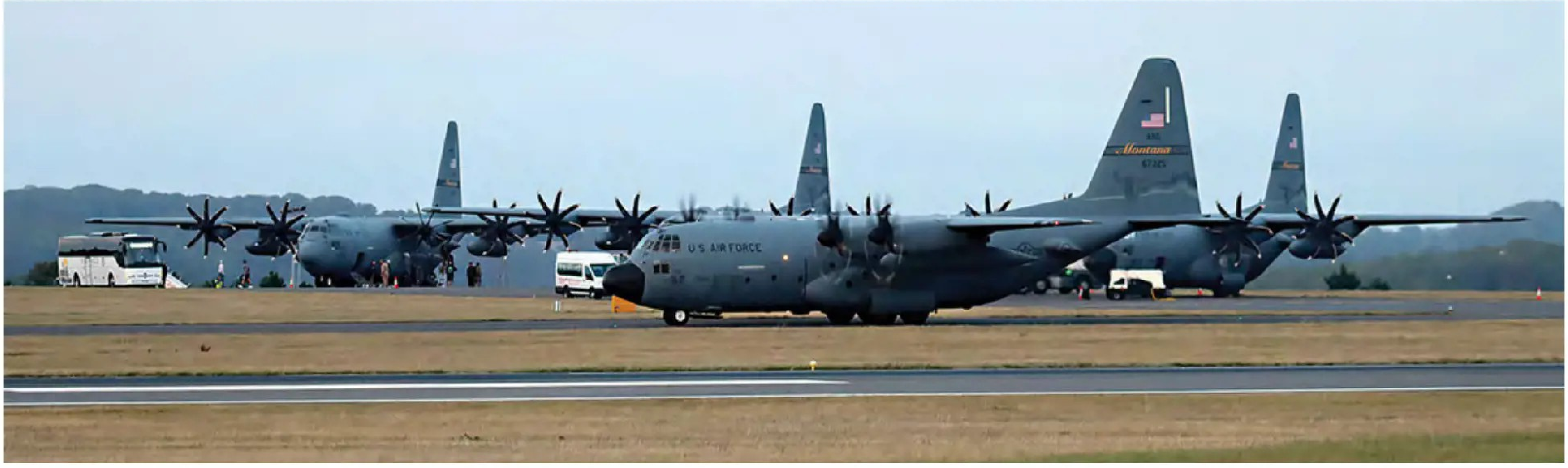
A nice visitor to London Stansted Airport on September 26 was US Navy Grumman C-2A Greyhound 162166/'51' from VRC-40 'Rawhides' DET II which was operating to/from Oslo and the USS Gerald R Ford (CVN-78). Two aircraft (callsigns'RG02' and'RG04') were due to arrive, but'RG04' unfortunately had to return to Oslo mid-flight *Ian Harding*



Nigerian Air Force Citation 680 Sovereign taxies out at Oxford Airport on September 13 for its second post-maintenance test flight. The Presidential Fleet jet has been at the airfield since May 2024 undergoing maintenance, which has also entailed a repaint to replace the orange livery from its time in the Nigerian National Emergency Management Agency (NEMA) Air Ambulance Service *Michael Miskin*



Marineflieger P-3C Orion, 60+03, of MFG 3 about to depart RAF Lossiemouth on September 16, on the next leg of the type's farewell flight to Keflavik, Iceland, having arrived in Scotland the previous day *Calum Linnen*



On September 3, four USAF C-130H's of the 186th Airlift Squadron, Montana Air National Guard, transited through Cardiff. Two arrived from NAS Sigonella (REACH231, 92-1454 and REACH232, 93-1455) and two from Souda Bay, Crete (REACH233, 95-6709 and REACH234, 96-7325). Oddly, they all landed in numeric order of callsign. REACH233 lost number 2 engine over France, so arrived on a full emergency, with a direct routing from the north coast of France over Southampton and on to Cardiff *Matthew Blunt*

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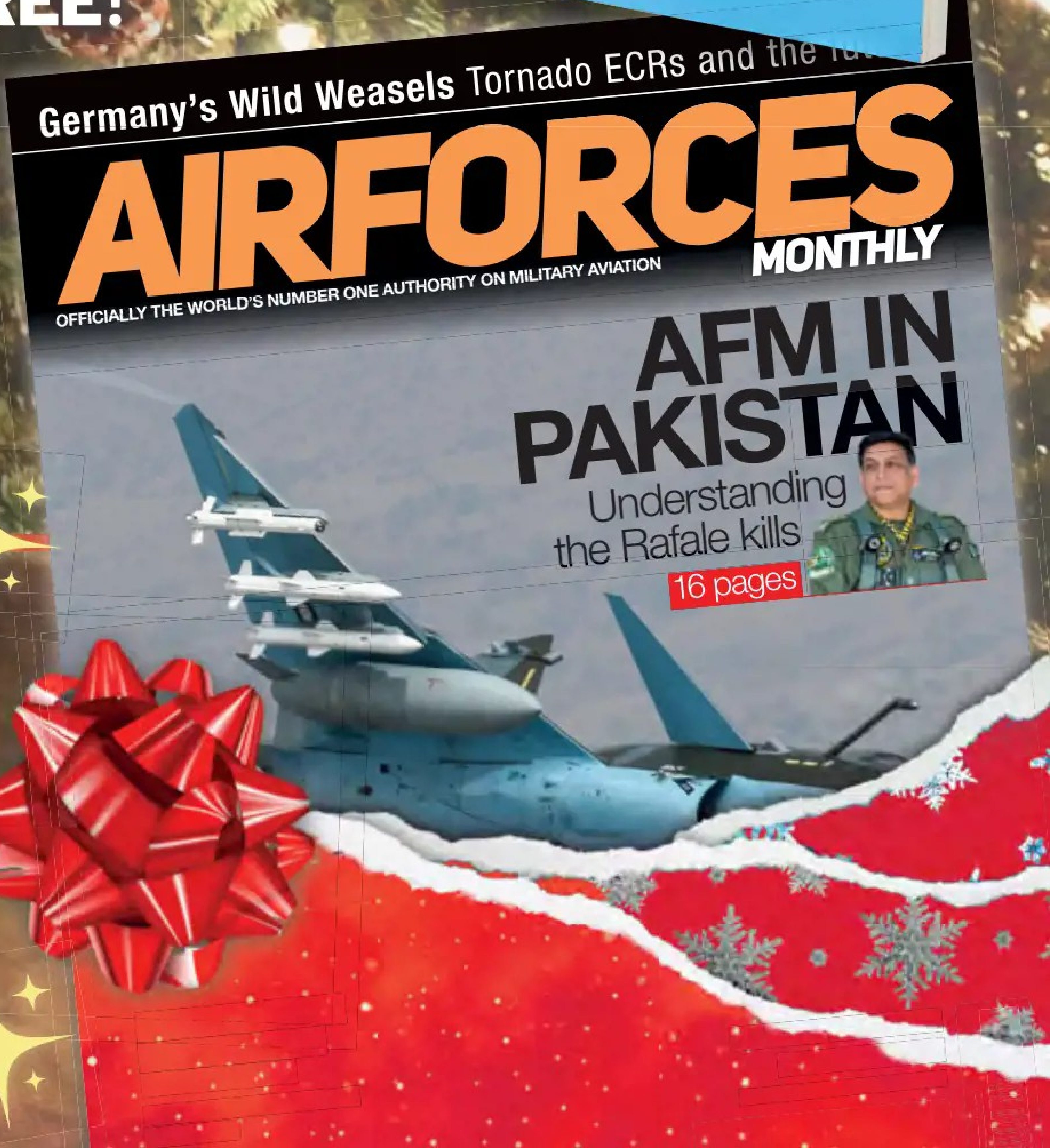
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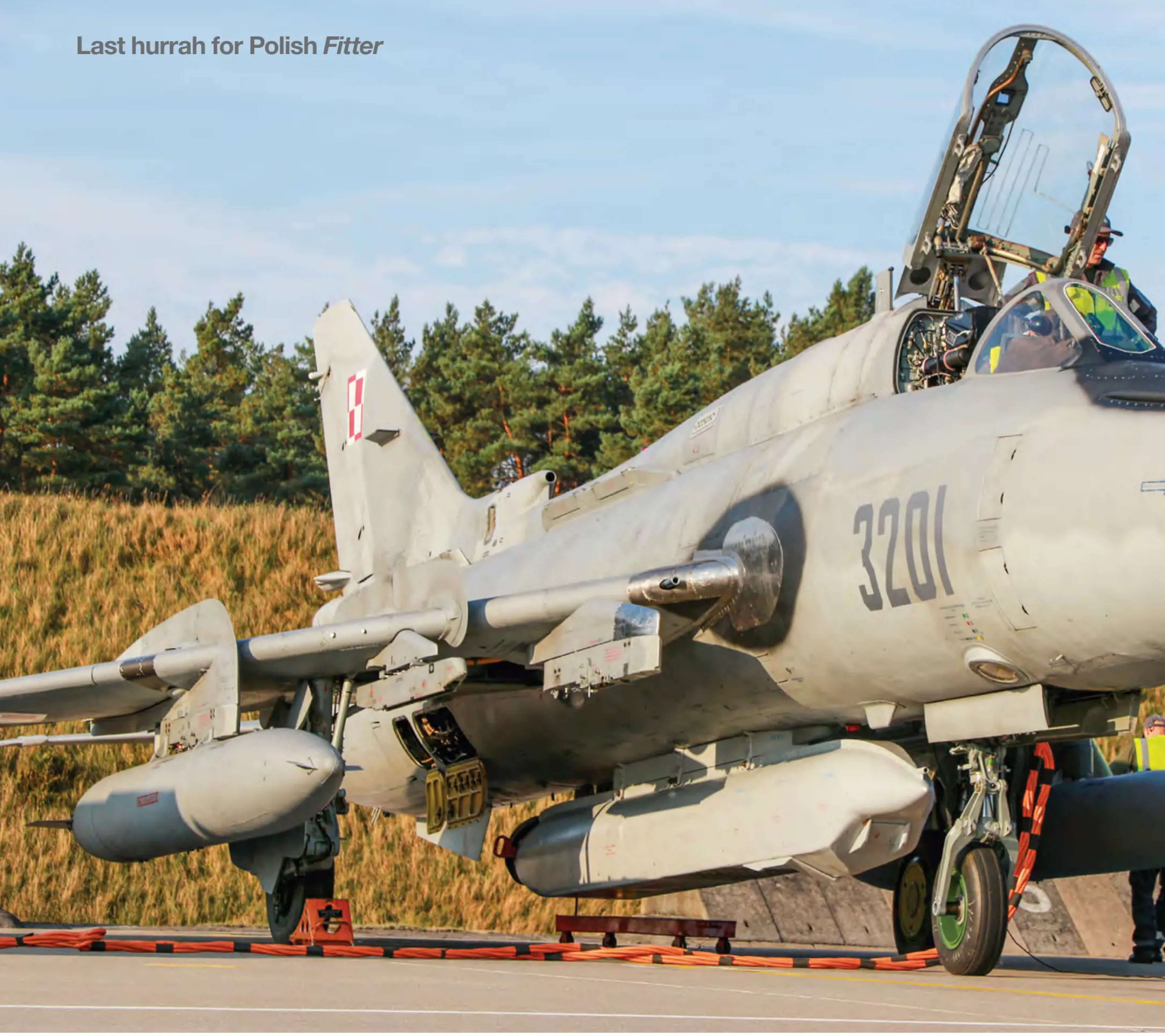


A Fitting Farewell

Above: ***The early morning sun shines on this Su-22M4 Fitter 3201, being prepared for a mission on the ramp at Miroslawiec. Fitted underneath the jet is the rarely photographed secretive KKR pod. The system is primarily used to photograph places of interest and to pick up electronic intelligence. It's not processed in real time, so the aircraft has to land for intel personnel to retrieve its 'catch'. The system, which weighs nearly 1,000lbs, will be retired with the Su-22 on November 31*** *All photos, author*

The Polish Air Force organised a special event to allow the media to witness one of the last flying days of the Polish Air Force Su-22 *Fitter*. **Alan Warnes** was there

There aren't many occasions when you know you will never see a particular operational aircraft flying again, like the RAF Harrier in 2010, but this was one of them. The Polish Air Force is officially retiring the Sukhoi Su-22 *Fitter* on November 31, and this event, on September 10, was the last chance to see the iconic Cold War jet flying.

The first Polish Air Force *Fitter* landed at Pila Air Base (which is closed now) on August 28, 1984, so when the fleet that originally comprised 90 Su-22M4s and 20 Su-22UM3Ks is officially retired, it will have served 41 years. Initially, the aircraft were due to be retired in 2016, but there wasn't the available fighters to replace them, so they were put through a limited upgrade to extend their life for another ten years.

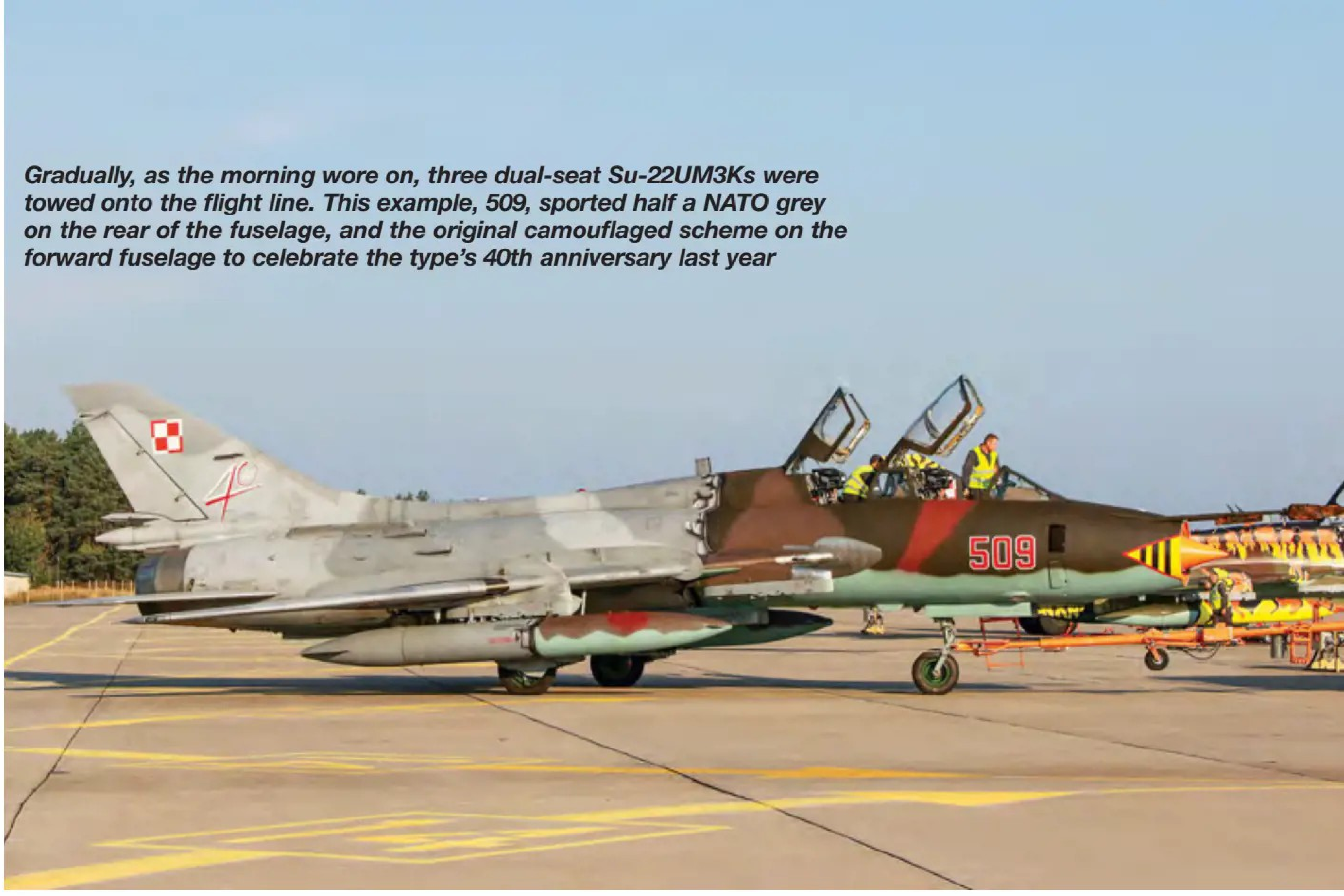
While the Swidwin station is being modernised to house Lockheed Martin F-35As and Korean Aerospace Industries FA-50s, the 21st Tactical Air Base (21 Baza Lotnictwa Taktycznego, 21.BLT) has been operating its Su-22 *Fitters* from Miroslawiec. The 40 ELT (Eskadra Lotnictwa Taktycznego, Tactical Squadron) was the last squadron to operate the Polish Air force Su-22 *Fitters*.

According to one of the senior pilots, four or five Su-22s were going to fly out to Powidz on September 12, to exercise on the Ustka training range. It coincided with Russia and Belarussia's joint Exercise Zapad-25 live drills from September 12-16. They were to remain there, operational, while Miroslawiec was closed

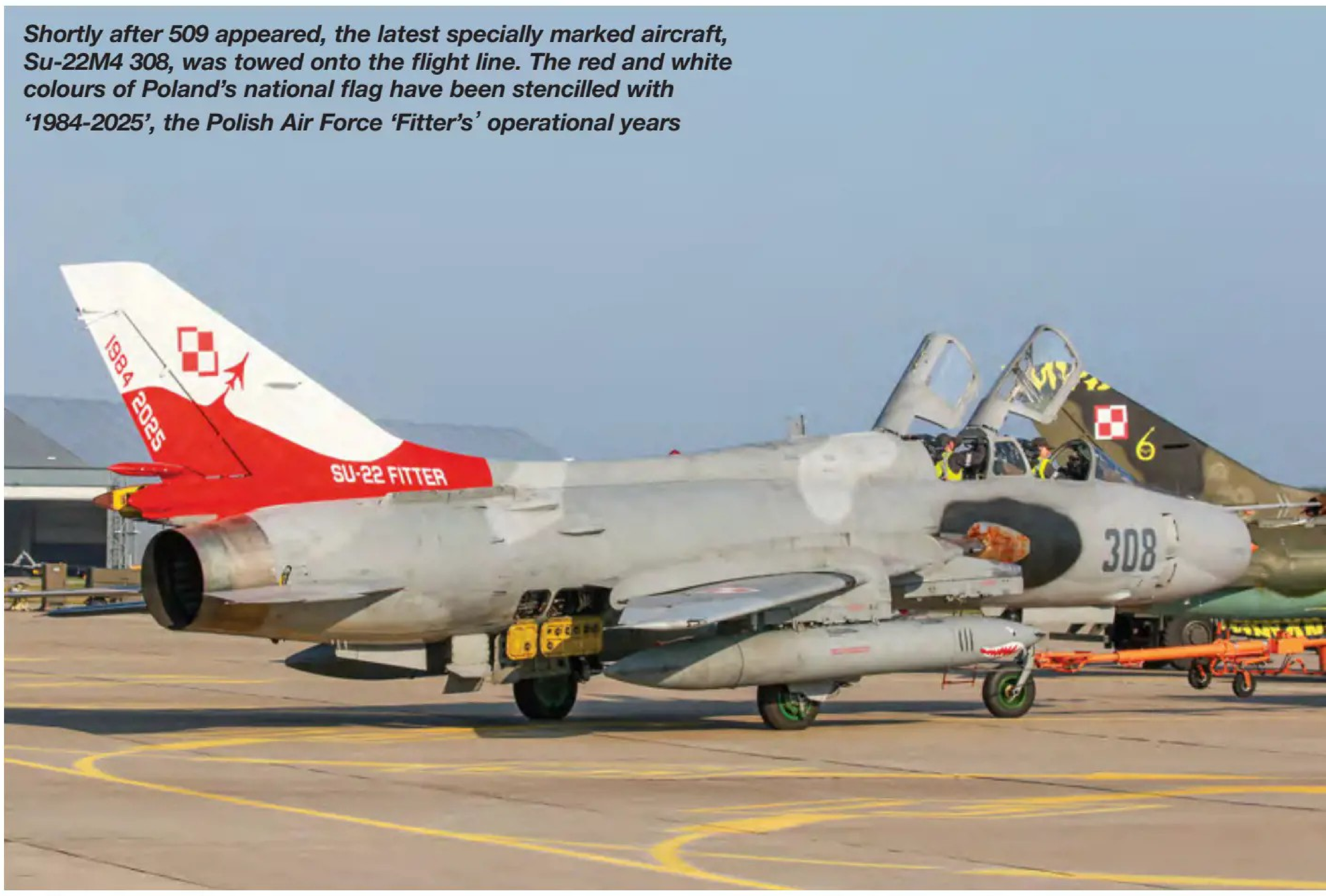
until mid-October for some remedial work. It was unlikely they would remain flying when they returned. Miroslawiec air base is now known as the 12th Unmanned Aerial Vehicles Base (12 Baza Bezzalogowych Statkow Powietrzynch) and houses both the Bayraktrar TB2s that were flying normal ops, and MQ-9 Reapers.

The media event took place without any pomp or ceremony and, despite this being the last operational flying day for the visiting Press, spotters and photographers, the Polish Air Force did not sell any merchandise or memorabilia. The event was carried out with typical Polish understatement… even though it marked the end for an aircraft that flew in the fighter bomber role for several Warsaw Pact countries – Czechoslovakia, East Germany, Hungary and Poland. Soon there will be none. **afm**

For more on Polish *Fitters* see:
***Sun starts to set on Polish Fitters*, July p50-51;**
***Final Chapter for Fitter*, July 52-59.**

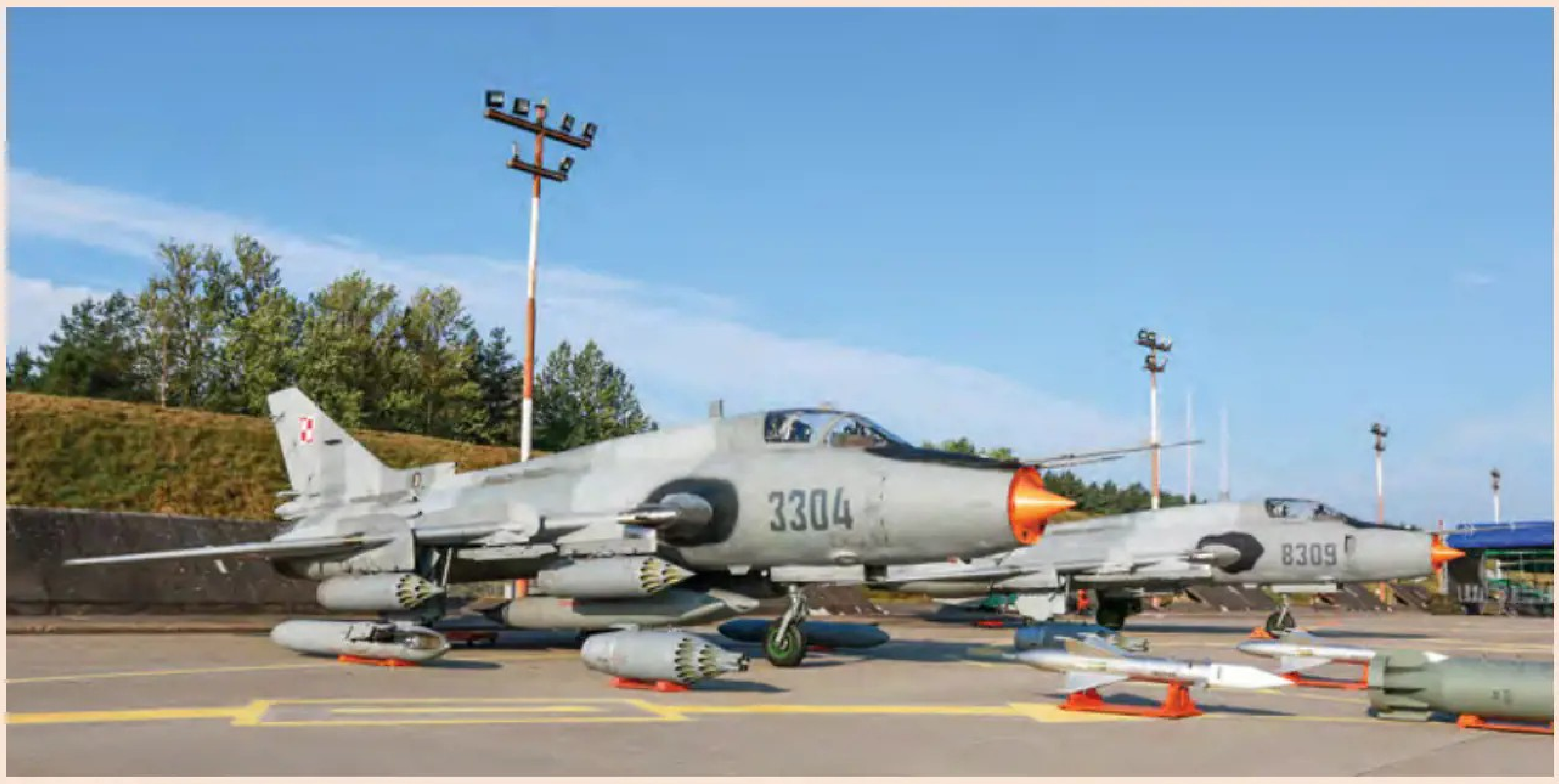


Gradually, as the morning wore on, three dual-seat Su-22UM3Ks were towed onto the flight line. This example, 509, sported half a NATO grey on the rear of the fuselage, and the original camouflaged scheme on the forward fuselage to celebrate the type's 40th anniversary last year

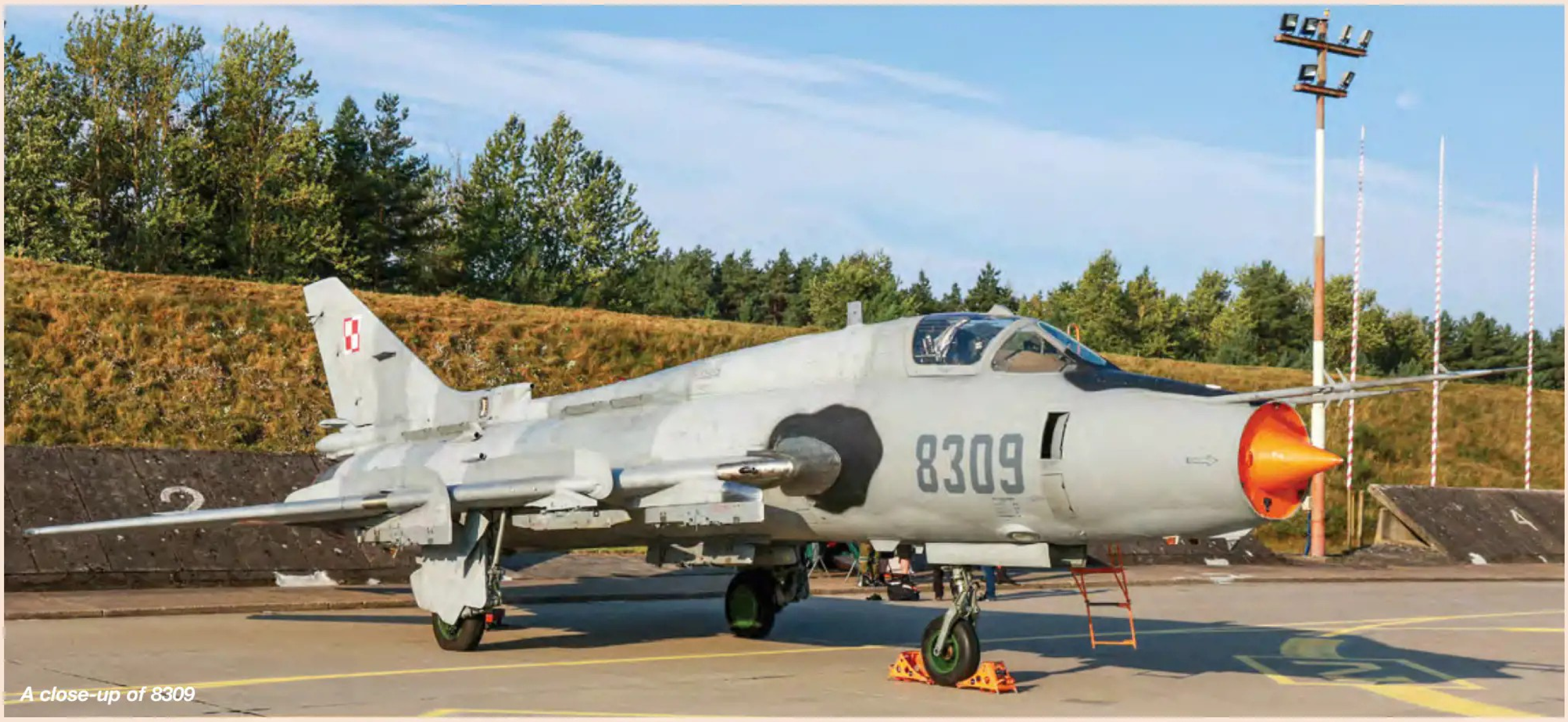


Shortly after 509 appeared, the latest specially marked aircraft, Su-22M4 308, was towed onto the flight line. The red and white colours of Poland's national flag have been stencilled with '1984-2025', the Polish Air Force 'Fitter's' operational years

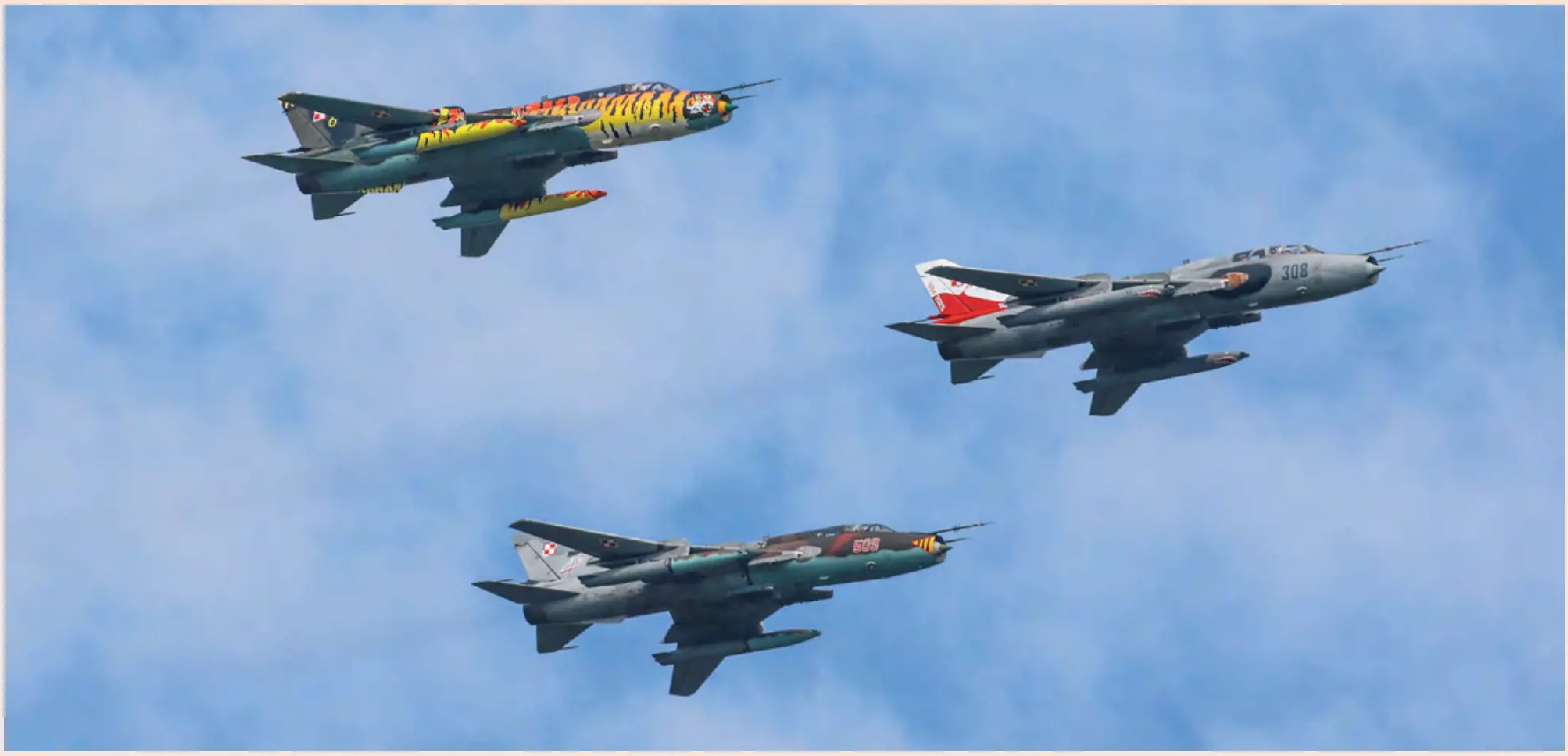
Four Su-22s parked on the ramp at 10.15am, with their brake-chutes packed. The furthest being the tiger-marked 707.



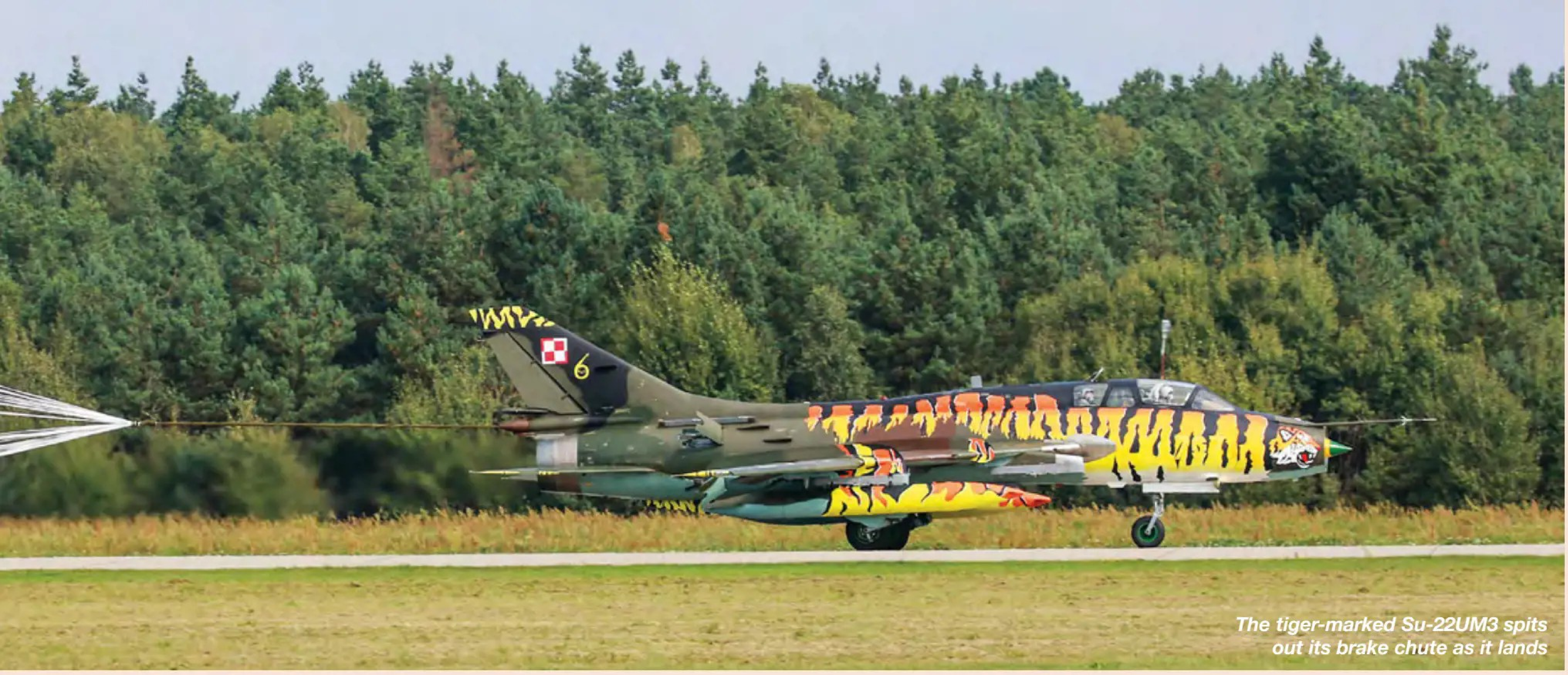
Two further Su-22Ms were on static display; 3304 was used to portray many of the weapons it can use, while media and enthusiasts had the opportunity to climb into the cockpit of 8309



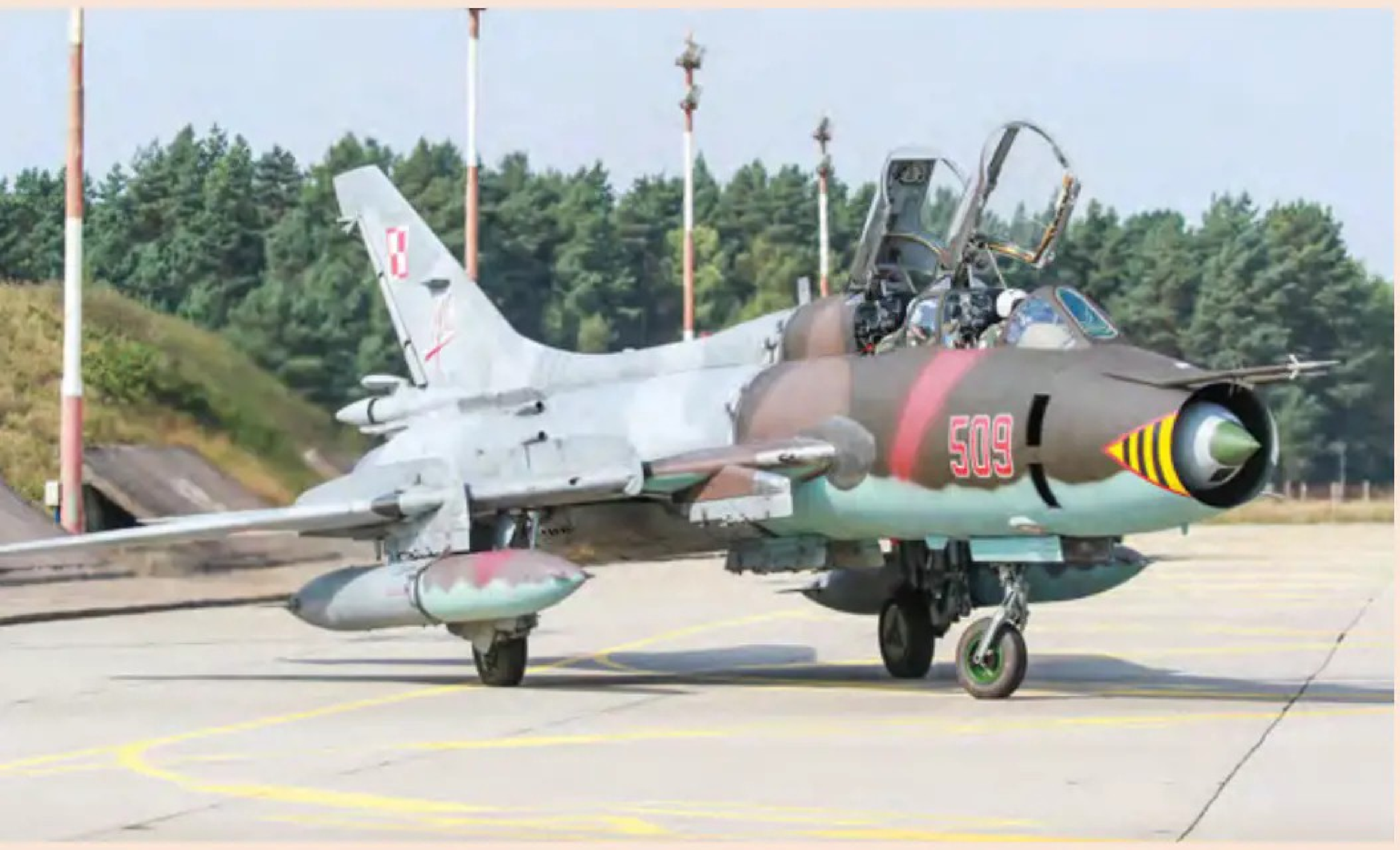
A close-up of 8309



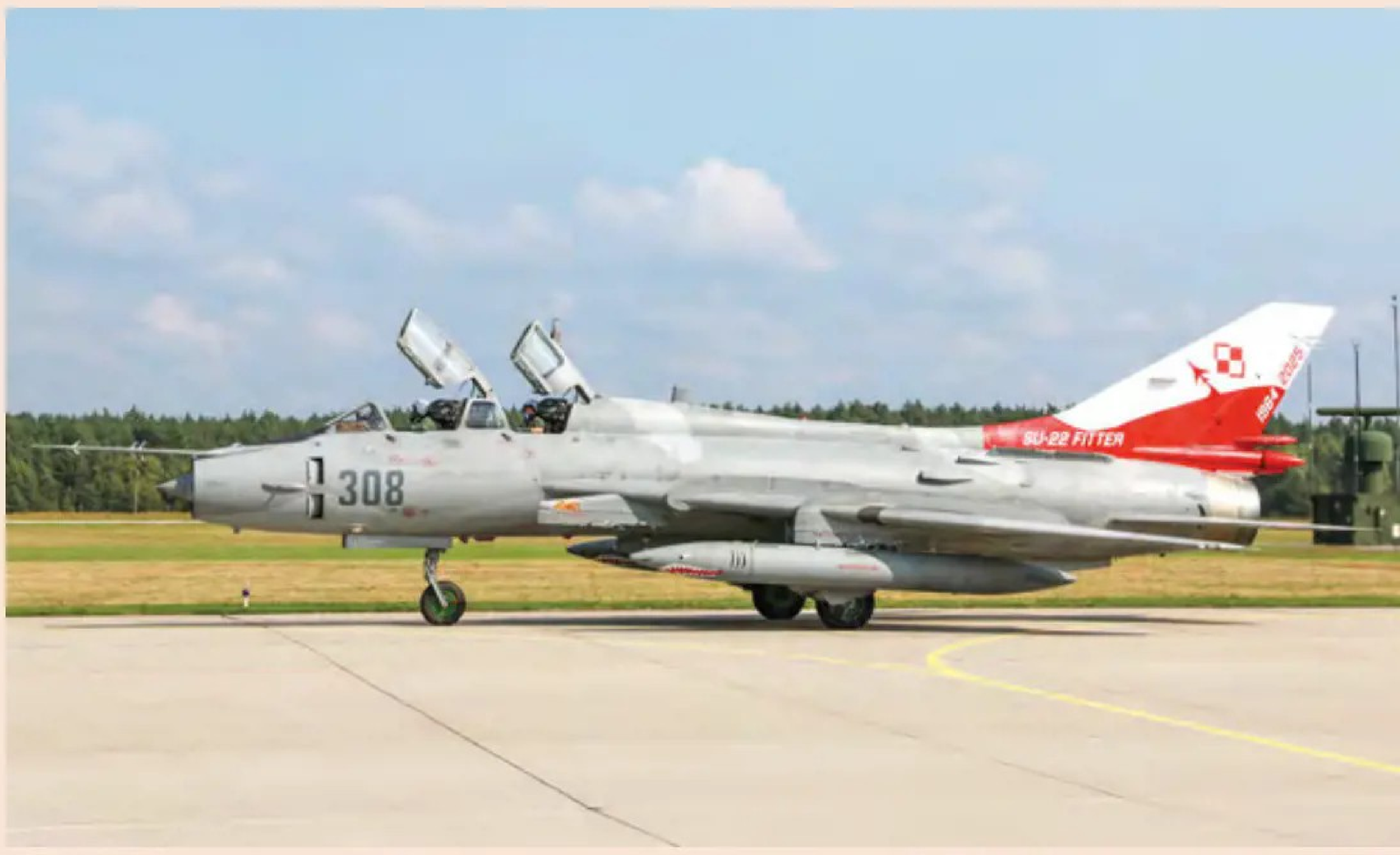
The three specially marked Su-22UM3K Fitters fly in formation over the Miroslawiec runway. The trio flew a symbolic farewell over Powidz, Pila and Swidwin before returning to base. The Polish Air Force flew 90 Su-22M-4s and 20 Su-22UM3s



The tiger-marked Su-22UM3 spits out its brake chute as it lands

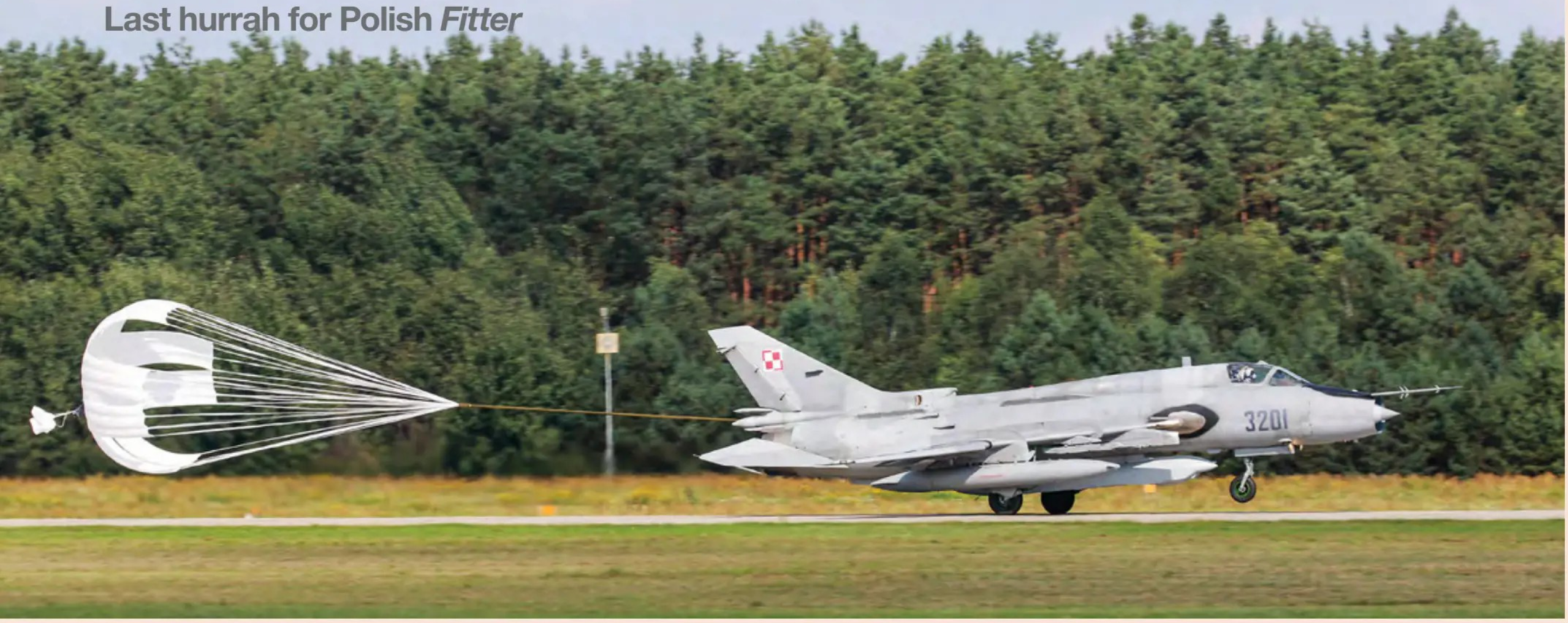


With cockpit canopies up, the jet is taxied back onto the flight line after the formation flypast

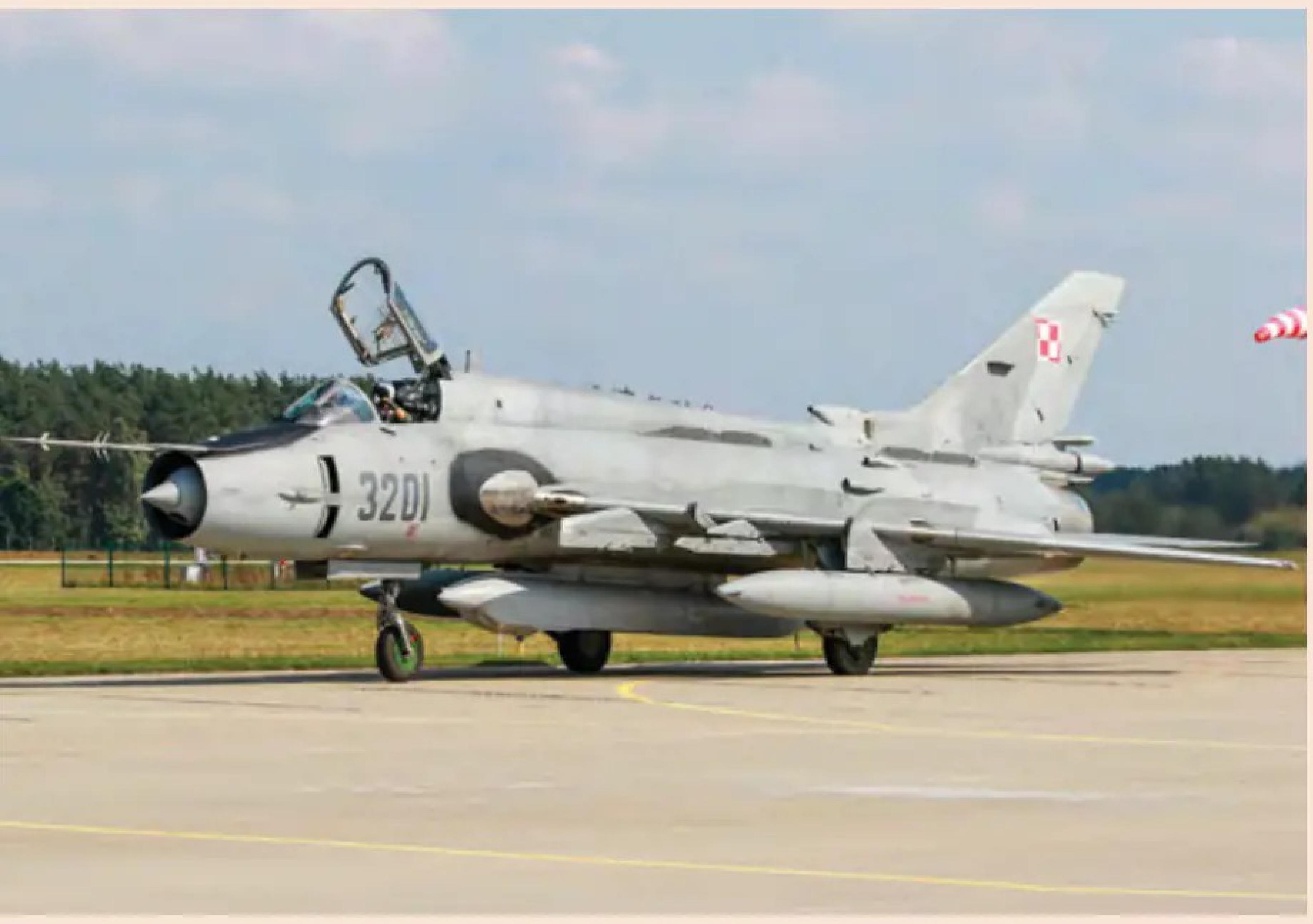


The formation lead moves slowly down the taxiway, for its last flight of the day

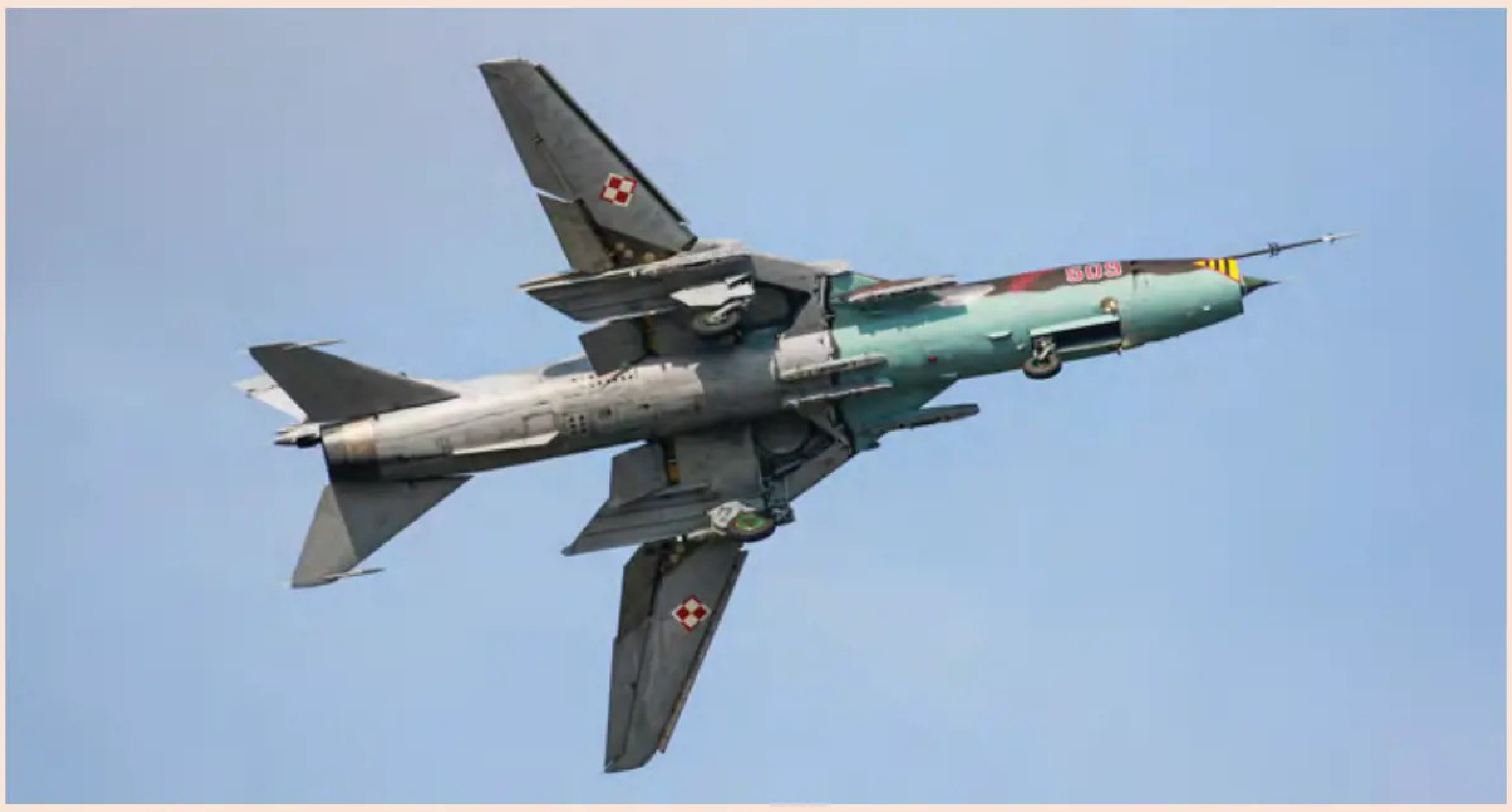
All six Su-22 pilots involved in the formation flypast stop for a photograph. The two on the left flew the grey-green jet, two in middle including the base commander were in the lead aircraft, and two on the right were in the tiger-marked Su-22. For security reasons they were not allowed to provide their ranks/names



The fourth Fitter to fly was 3201. It is seen here making its last-ever landing because, as the base commander told some of us, this was its final flight

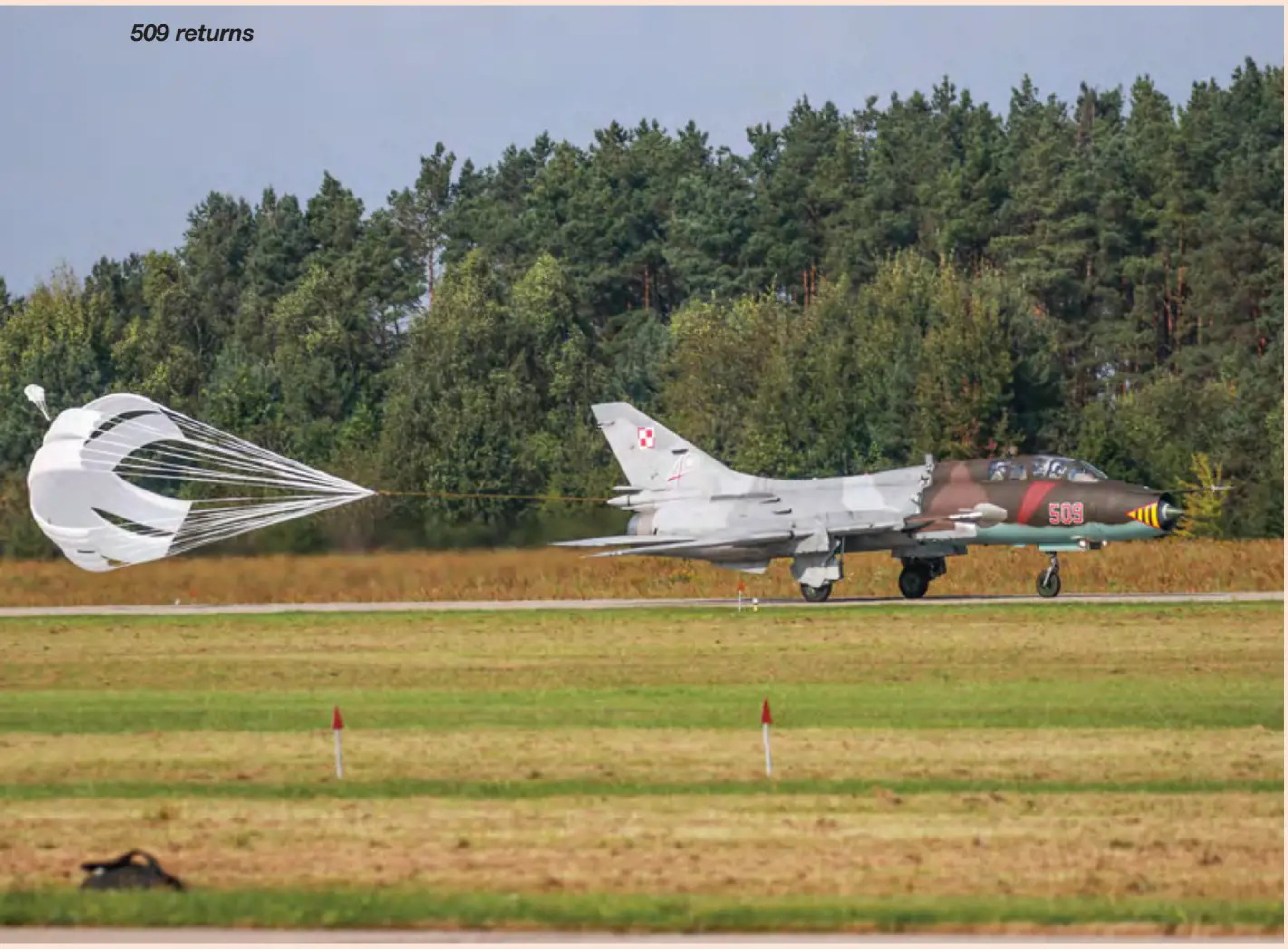


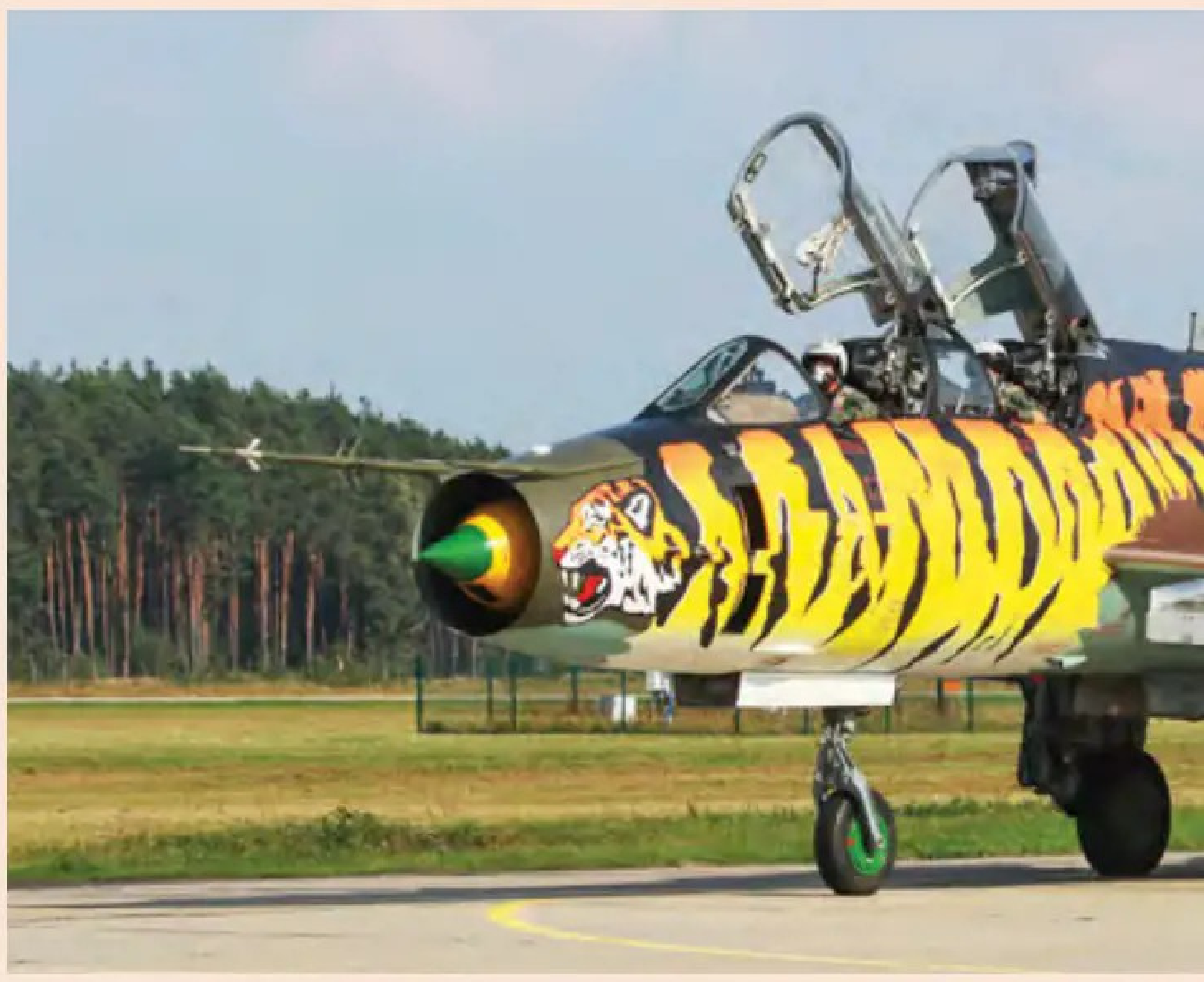
With the canopy up, the pilot waves to onlookers. He was not involved in the formation flypast and it was unclear what the 40-minute mission was about – operational or ceremonial

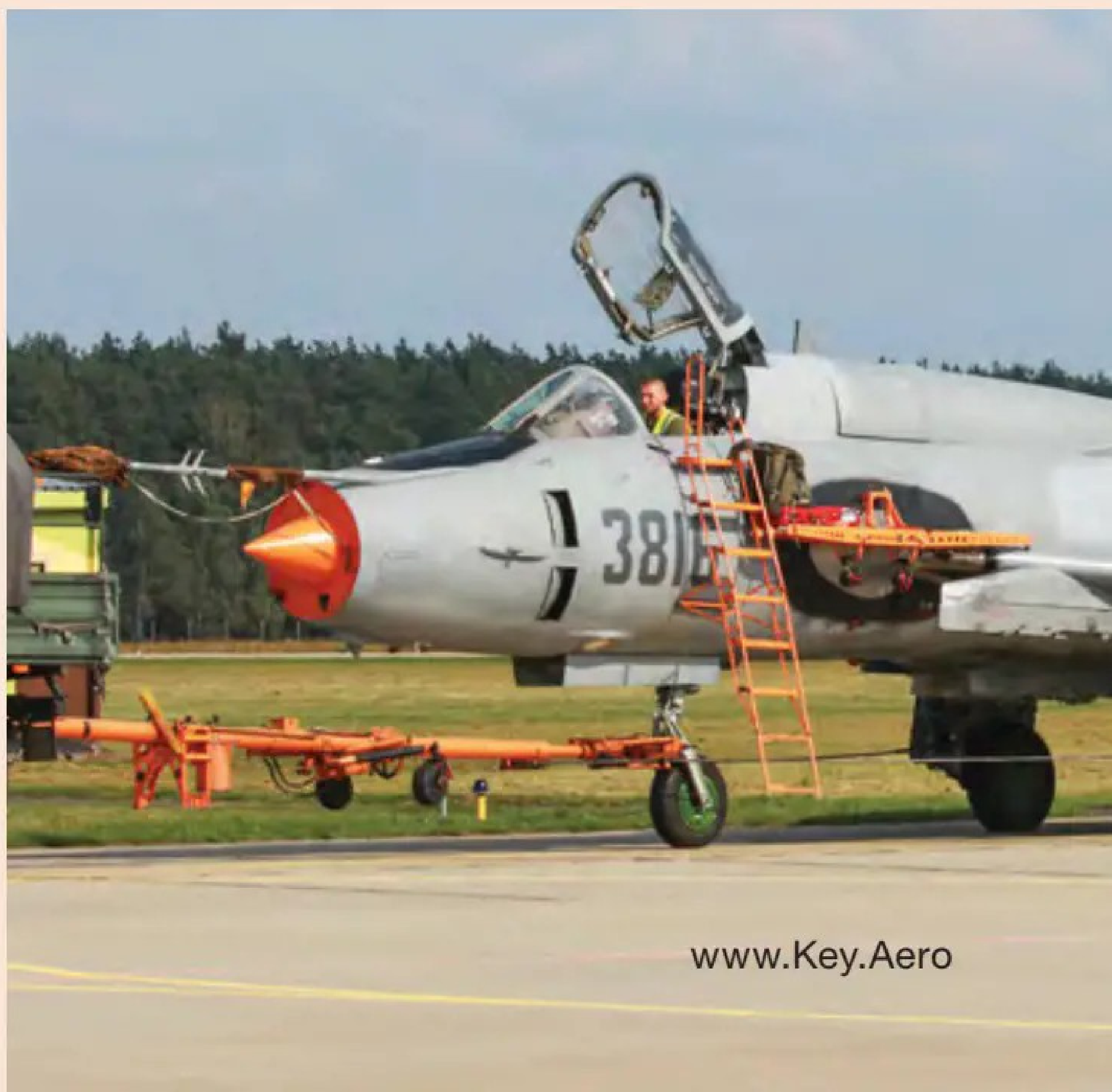


Two pilots flew the 40th anniversary Su-22UM3Ks a second time for a demonstration around the air base, seen here making a low pass and then banking over with its wheels extended. The wings swept forward to provide lift, but for high speed the wings are swept back

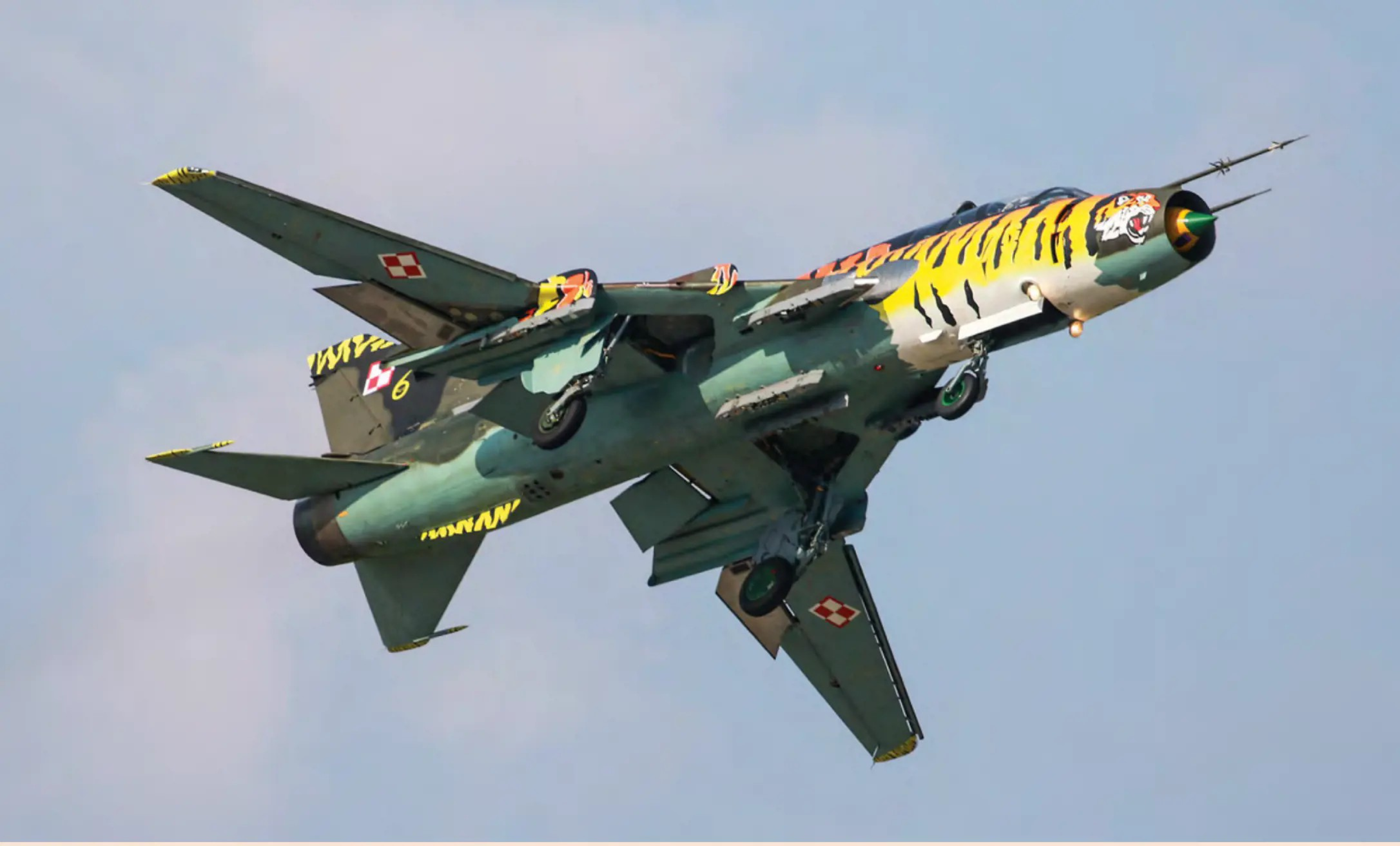
509 returns







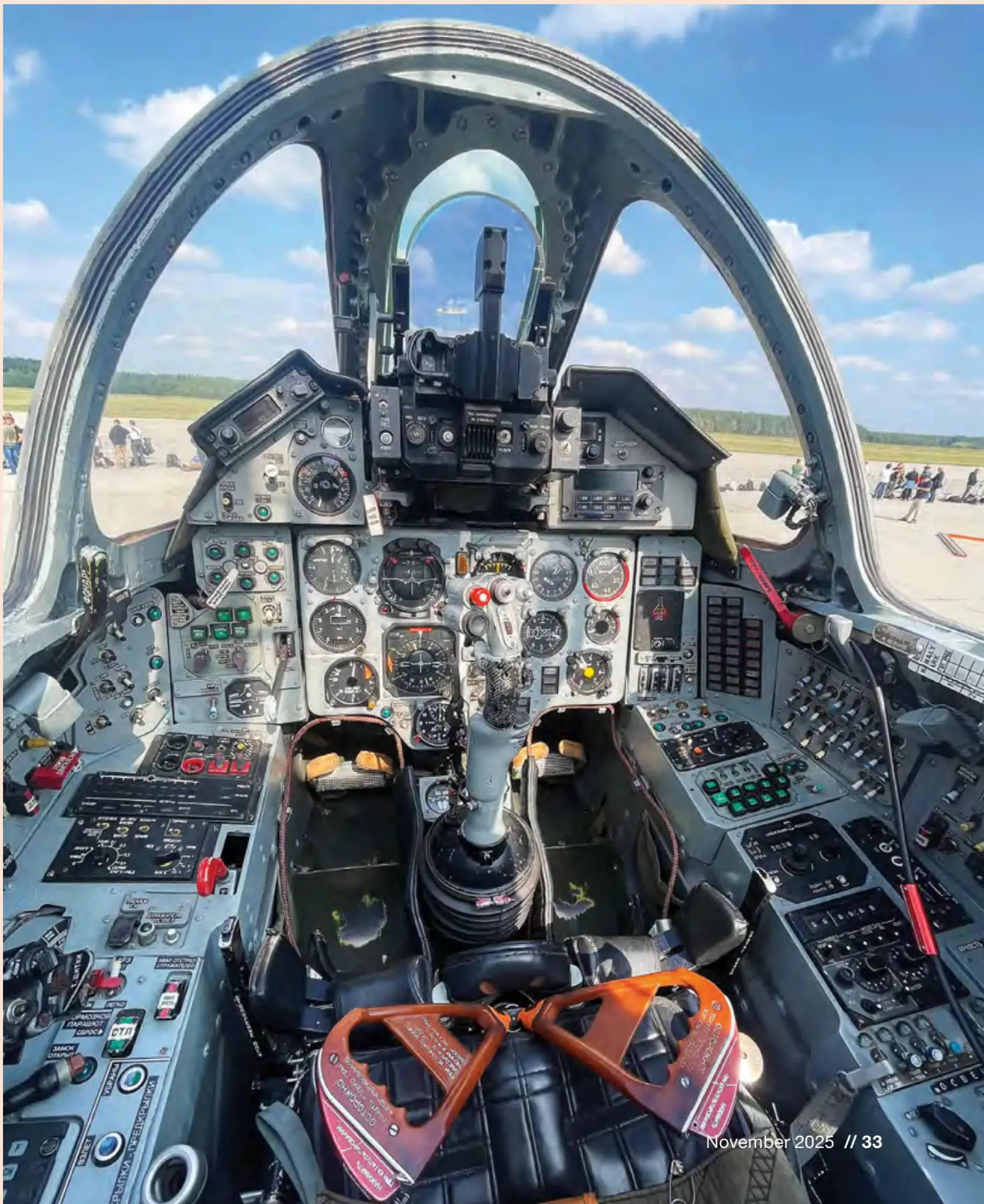
Right: ***Another Su-22M4 was towed to the flight line later in the afternoon, to be prepared for the next day when the Polish Air Force (PAF) held a private farewell to the iconic jet. The PAF sent four or five aircraft east to Powidz Air Base to participate in Exercise Iron Defender***



Above: ***The tiger-marked jet goes through a similar manoeuvre as 509 does (see left), with the base commander on board***

Right: ***The Su-22 Fitter cockpit: 1980s technology with a twist of mid-2010s new avionics/communications systems and conversion of cockpit metrics to imperial, in line with NATO standards***

Below: ***Then the beautiful-looking jet that made its public debut in these colours at RIAT in 2005 is taxied back to the ramp***



FRANCE'S nuclear mission

Henri-Pierre Grollaeau looks at the French nuclear deterrence force that has been the cornerstone of the country's defence policy since the 1960s

ARMEE DE L'AIR
ASMPA

Nuclear deterrence is designed to provide a state with such a powerful force that attacking it would lead to unacceptable risks for the aggressor. But do not be misled: nuclear deterrence is, above all, a political, military, industrial and financial commitment, a costly endeavour that requires constant support and perpetual investments to maintain a credible force in the long term. It is about far more than just missiles, warheads, submarines and aircraft. It also relies on a strong nuclear civilian/military industrial base and on a robust communication network to forward the firing order from the President down to the end users in a quick, reliable and safe manner. It requires a permanent control to ensure that it will not be compromised or used in an unlawful manner through unauthorised orders.

Nuclear deterrence is also dependent on the availability of test ranges or deep and highly secure underground pits for the initial detonation trials of the first few warheads, at least until a simulation programme can take over after enough data has been acquired and understood, to digitally replicate the nuclear explosion process accurately.

Finally, nuclear deterrence relies on something that is often overlooked by observers: the culture of secrecy. In France, this culture has been pushed extremely far, with all individuals selected for a nuclear operational mission, a nuclear research/design job or a nuclear industrial role undergoing a complex and thorough security screening process. This culture also relies on the extreme partition of knowledge, with each individual only knowing what they need to perform their mission or job, meaning that no one has a full picture of the whole nuclear deterrence enterprise, reducing the risk of espionage and leaks of a whole range of critical information.

Strong industrial base

No country can produce a nuclear warhead without first developing and building the nuclear powerplants and nuclear enrichment facilities that are indispensable to produce

The ramjet-propelled ASMP-A missile (the white armament) *FASF*

the fissile material required. Thanks to its strong industrial base that supports 56 nuclear reactors for electricity production, the French nuclear enterprise is completely independent from foreign powers as all required components are designed and built domestically. French nuclear expertise has been acquired at great cost in the 1950s, 1960s and 1970s and has been sustained and developed ever since.

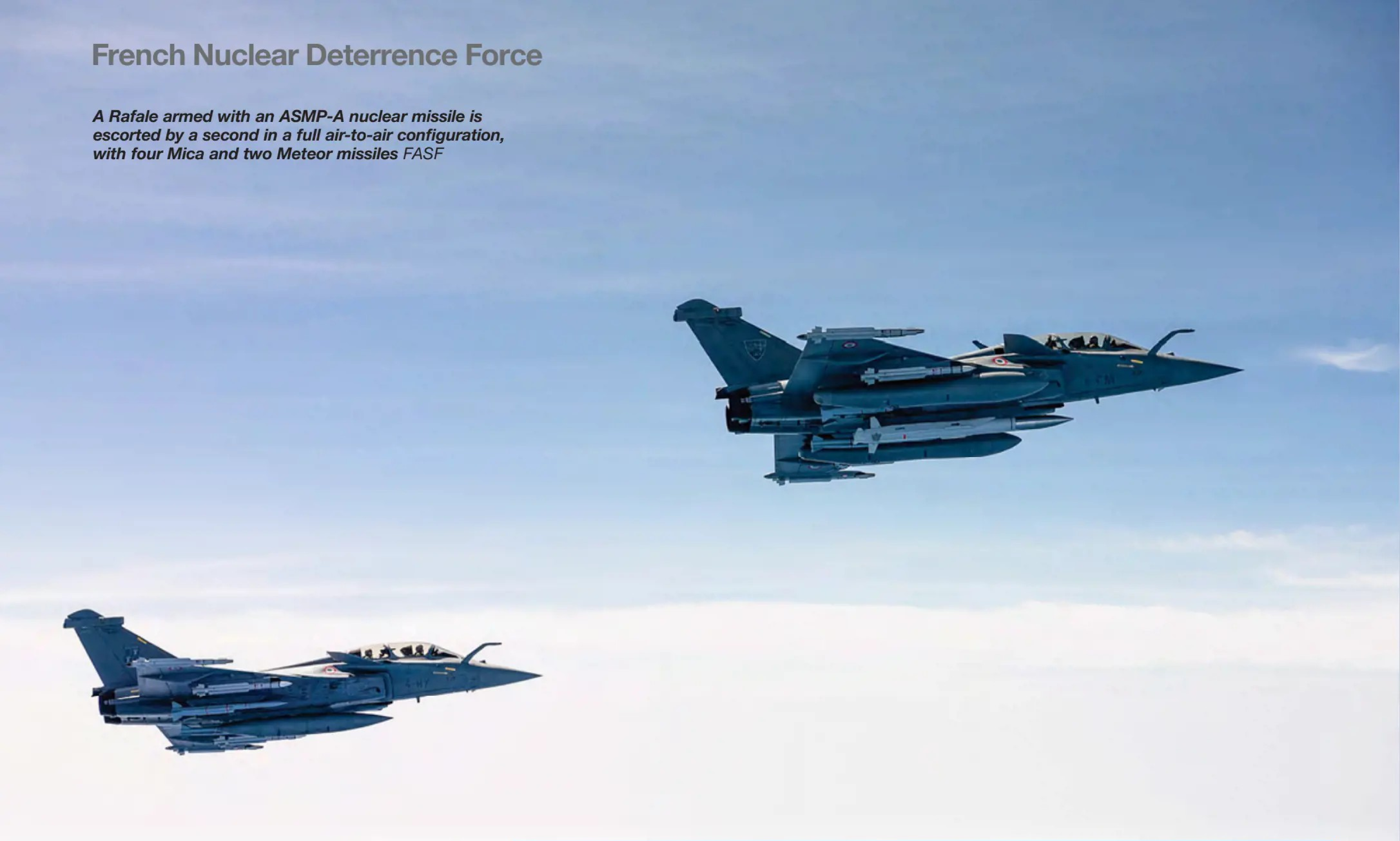
But the industrial base needed for nuclear deterrence is not limited to the building the warheads. It also covers a broad spectrum of other systems, including submarines and their nuclear propulsion systems, ballistic missiles and their re-entry vehicles, communication networks and the associated cryptology and warplanes and their own missiles. This encompasses a bewildering array of technologies and of scientific expertise, from radars to sonars, metallurgy to microchips, aerodynamics to fluid mechanics and aircraft reactors to missile motor chemistry.

Three components

Since the 1960s, nuclear deterrence has been the cornerstone of the French defence policy. The country has committed to maintaining a strong nuclear force composed of multiple components that, in the early 1980s, included Mirage IV bi-sonic bombers, strategic submarines, interregional missile silos in the Albion plateau, Jaguar, Mirage III and Super Etendard tactical bombers and Pluton battlefield tactical nuclear missiles from five army artillery regiments. Since the end of the Cold War, the French nuclear deterrence forces have been cut down to just three components, reflecting the peace dividends that prevailed after the fall of the Berlin Wall:

- **Forces Aériennes Stratégiques** (FAS; strategic air command);
- **Force Aéronavale Nucléaire** (FANu; naval aviation nuclear force);
- **Force Océanique Stratégique** (FOST; oceanic strategic force)

The last of these, the French Navy nuclear submarine force, comprises four Le



A Rafale armed with an ASMP-A nuclear missile is escorted by a second in a full air-to-air configuration, with four Mica and two Meteor missiles *FASF*

Triomphant-class ‘boomers’. Each of these four submarines is capable of carrying up to 16 M51 long-range ballistic missiles, each with up to ten MIRV (Multiple Independent Re-entry Vehicles) and an array of decoys, although the actual number of MIRVs per M51 aboard the submarines is thought to be less.

These three complementary military arms offer overlapping capabilities and responsibilities. The FOST, a hidden, unseen, quiet and low-profile force, would be engaged as a massive response tool, with enough firepower in each of its submarines to flatten an entire country, each independently targeted TNO (Tête Nucléaire Océanique; nuclear oceanic warhead) MIRV having an 100 kilotonnes destructive power.

The FAS and FANu are far more visible, offering the possibility of sending a tough political and military message just by launching a wave of aircraft and tankers. These two forces create an effect that is reversible, with the option of recalling the aircraft up to the last minute after diplomatic negotiations, which is not the case with a submarine-launched M51 ballistic missile. Still, they also offer a very high destructive power that could be used as a last warning before the massive engagement of the FOST as part of a gradual use of nuclear force.

Four dedicated FAS squadrons

The Forces Aériennes Stratégiques was created in January 1964 to operate the Mirage IV nuclear bomber and the C-135F stratotanker, thus forming the first French nuclear component. They have since operated Mirage 2000N strike fighters, which were eventually withdrawn in 2018, leaving the Rafale as the FAS’s heavy puncher.

Today, the FAS fields five dedicated frontline nuclear squadrons. Two of them

Even in such a heavy configuration, the Rafale remains an agile and sprightly performer *FASF*

Rafale B two-seaters of the Forces Aériennes Stratégiques also participate in QRA air-defence missions. This aircraft is armed with two live Mica missiles *Henri-Pierre Grollaeau*

are based in Base Aérienne 113, at Saint-Dizier: Escadrons de Chasse 1/4 'Gascogne' and 2/4 'La Fayette', both equipped with the Dassault Aviation Rafale B two-seater. The Rafale omnirole fighter was designed from the start with the nuclear deterrence mission in mind. The aircraft has a long-range, heavy load-carrying capability, a state-of-the-art self-defence/electronic warfare suite, a very good radar, long-range air-to-air missiles and an automatic terrain-following capability to hide 'down in the weeds' from surface-to-air missiles. While the F-35 has to overfly its target to drop a free-fall bomb – a very dangerous proposition, even for a stealth fighter – the Rafale is designed to deliver an ASMP-A (Air-Sol Moyenne Portée-Amélioré; medium-range air-to-surface – improved) ramjet-propelled stand-off nuclear missile from an extended range. Although all data is classified, the ASMP-A's maximum speed is thought to exceed Mach 3 at high level and Mach 2 at low level. Range is supposed to exceed 500 km at very high altitude, half that at low altitude. In 2015, it was revealed by then French President François Hollande that France had 54 ASMP-A missiles. This number has since diminished, a few missiles having been expended by the FAS and the FANu during the Tirs d'Entraînement des Forces (Forces Training Firings) organised off the Biscarosse firing range over the Atlantic Ocean every two years on average to test the 'kill chain', ensuring that everything works as planned, from the transmission of the firing order down to the launching of the aircraft and the missile itself.

A mock-up of the ASMP-A. With its long range and trisonic speed, this ramjet-propelled missile is a stand-off weapon launched from outside the range of air defences *Henri-Pierre Grollaeau*

Strategic tankers

Another two squadrons are stationed in Base Aérienne 125 at Istres: Escadrons de Ravitaillement en Vol et de Transport Stratégique 1/31 'Bretagne' and 2/31 'Estérel', both flying the Airbus A330 MRTT Phénix in the tanker and strategic transport roles. Escadron de Ravitaillement en Vol (ERV) 4/31 'Sologne', which operated the last three remaining KC-135RG Stratotankers, disbanded in July 2025 and the last KC-135RG was withdrawn from service, bringing to an end an operational history that had begun in 1964.

The Phénix, a considerably larger aircraft than the earlier C-135FR/KC-135RG, offers outstanding capabilities to the FAS, helping massively expand the range of a Rafale nuclear raid. With its L16 terminal, it has also become a key connectivity player and a major node on the L16 datalink network. Its satellite link helps nuclear assets remain in permanent contact with the higher echelons of the French state. It can also be used as an airborne command post.

Strict training requirements

To guarantee the credibility of the French nuclear deterrence force, the FAS squadrons train on a daily basis. Four times a year, massive exercises called Pokers are organised to simulate a long-range nuclear raid. Usually flown at night (although a Poker was flown in daylight in March 2025), the raid is undertaken in radio silence, using navigation techniques and systems that do not rely on GPS-type signals. It comprises FAS Rafale and Phénix aircraft escorted by other assets: Mirage 2000-5F interceptors to boost the offensive counter capabilities of the raid, Mirage 2000D strike fighters with Scalp cruise missiles to help neutralise enemy radars and SAM sites, other Rafales to boost the number of fast jets and increase their global firepower and at least one E-3F AWACS for command and control.

Other missions are sometimes launched to show the flag, demonstrate operational capabilities and quietly send political messages. This was the case in 2014, 2019 and 2024, during the deployments of two Rafale fighters to La Réunion island, a French overseas territory in the Indian Ocean, 9000km and 11 flight hours away from the French mainland. Although it has never been officially confirmed, the long-distance missions were launched to demonstrate that a potentially hostile country in the Middle East could easily be targeted.

An air-to-air oriented mission

A nuclear raid in times of tensions, crisis or war would imply flying through enemy interceptors while avoiding surface-to-air missile engagement rings.

A Rafale pilot explained: “Few people realise that a nuclear raid is, first and foremost, a long-range air-to-air mission during which we would have to defeat fast jets launched to intercept us. This is the reason why Rafale FAS aircrews devote a fair share of their training to the air-superiority mission as part of the wider offensive counter air role. Thankfully, the Rafale, with its AESA radar, its front sector optronics, its Spectra electronic warfare suite and its ramjet-propelled Meteor air-to-air missiles, is perfectly adapted to all air-to-air missions, including escort and self-escort. Its exceptional radar range gives us ample time to detect, classify and engage targets. We have modified our tactics to take full advantage of the capabilities offered by the AESA: we do not have to close in on our enemies and we take less risks. Our AESA radar waves travel much further away than with the older array and they are detected from longer distances by ‘enemy’ radar warning receivers. This offers a deterrence effect, and we noticed during exercises that the fighters playing the enemy sometimes just turned back or hesitated before committing themselves to an interception.”

French nuclear bases are all defended by Escadron de Défense Sol-Air equipped with the Mamba surface-to-air missile *Henri-Pierre Grollaeau*

For a couple of years now, Rafale B two-seaters belonging to the two FAS squadrons have taken a more active role in the air-defence/air-policing mission as part of counter air/homeland defence, participating in the quick reaction alert (QRA) role, thus supplementing a dwindling number of Mirage 2000-5F interceptors and helping alleviate the burden of the other Rafale squadrons.

Strong defences

The defence of nuclear bases should not be forgotten. Each French nuclear base has a large force protection squadron to ensure that access to nuclear areas is always strictly controlled. To boost the ground defences even further, the outer perimeter of each base is patrolled by the Gendarmerie Nationale, the French military police force.

To further limit the risk to nuclear assets, each of the FASF nuclear bases is defended by an Escadron de Défense Sol-Air (surface-to-air defence squadron) armed with the Mamba surface-to-air missile system that has proven its operational efficiency in Ukraine. The squadrons are currently being reinforced with new equipment to counter the threat of small drones, and with the new VL Mica launchers that have now started replacing the older Crotale NG systems, some of which have been donated to Ukraine. The Mambas, VL Micas and anti-drones systems help create a multi-layered defence, with the capability to engage a whole range of challenging threats: ballistic missiles, anti-radar missiles, cruise missiles, fast jets, helicopters and UAVs.

A further two squadrons

In these times of heightened international tension, France has expanded its nuclear force. On March 18, 2025, Président Emmanuel Macron confirmed that Base Aérienne 116 at Luxeuil would host two nuclear-capable Rafale squadrons. Until 2011, Luxeuil was a Mirage 2000N base, with two FAS nuclear strike squadrons.

The recent announcement also confirmed that Luxeuil will be the first base equipped

France does not maintain a permanent nuclear airborne alert, but has the capability to do so at very short notice *Henri-Pierre Grollaeau*

A Phénix tanker sits at its Avord forward operating base after a mission over Poland.No long-range nuclear deterrence mission can realistically be undertaken without refuelling support *Henri-Pierre Grollaeau*

The C-135FR and KC-135 stratotankers are the aircraft that permitted the Forces Aériennes Stratégiques to develop a robust operating concept *Henri-Pierre Grollaeau*

with the future Standard F5 Rafale variant, the next major evolution of the twin-engine fighter. Considered as the Rafale mid-life update, this variant will be equipped with a new generation suite, including the new RBE2 XG (extended generation) fitted with GaN AESA radar modules, and will be armed with an entirely new missile called ASN4G (Air-Sol Nucléaire de 4ème Génération; fourth-generation nuclear air-to-surface). Details of this armament are top secret. What is known is that the ASN4G will be hypersonic and will be heavier and bulkier than the current ASMP-A, exploiting the Rafale's heavy load carrying capabilities to the full. According to Macron, service entry should occur around 2035.

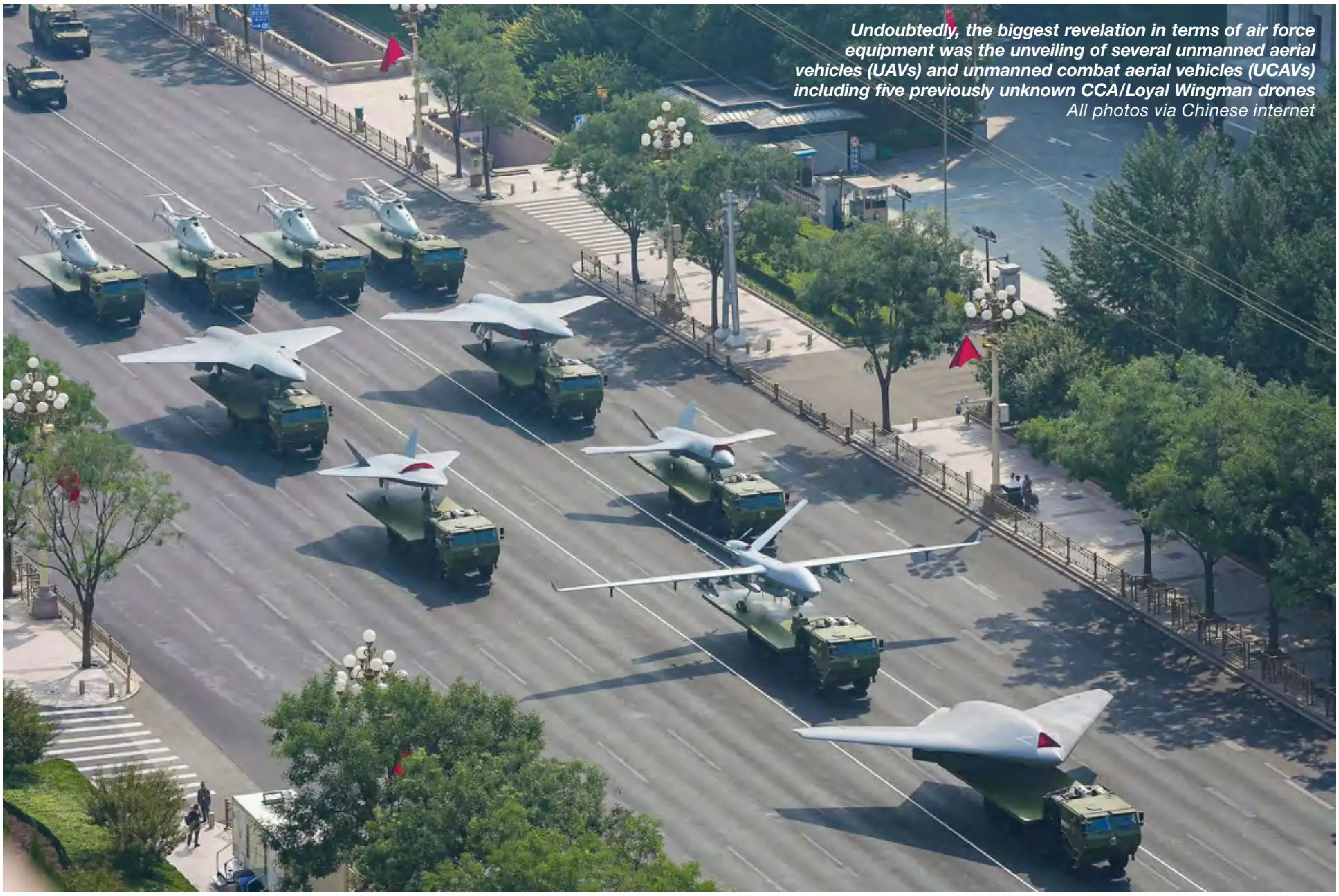
For the last 60 years, France has maintained a powerful nuclear force that peaked in terms of warheads and nuclear delivery assets during the 1980s. Today, France has at its disposal around 300 nuclear warheads, enough to maintain a strong nuclear deterrence force which is considered the jewel of the crown of the French military by nearly all political parties. Its future is ensured for the long term, with heavy investments being regularly announced. Recently, both the ASMP-A and the M51 missiles have been modernised to increase their operational capabilities and address obsolescence issues. A new nuclear ballistic submarine programme has been launched to replace the current Le Triomphant-class, and the future ASN4G is also under active development. These investment levels confirm that France is committed to remaining a powerful nuclear country within the European Union. **afm**

French Navy's FANu

The FANu stood up in 1978 when aircraft carrier *Clemenceau* officially became operational with the brand-new Super Etendard strike fighters armed with free-fall An-52 nuclear bombs. It was followed by carrier *Foch* in 1981. From 1989, the Super Etendards were armed with the ASMP nuclear missile, first from *Clemenceau* and *Foch*, then from nuclear carrier *Charles de Gaulle*. The nuclear deterrence mission was taken over from 2009 by the Rafale M equipped with the improved ASMP-A missile. Compared to the Super Etendard and its ASMPs, the Rafale offered a massively increased self-escort capability, a considerably longer range, a terrain-following capability and an electronic warfare suite, while the ASMP-A brought better reach, improved agility and increased accuracy.

The FANu is a non-permanent force, activated when the French Navy flagship *Charles de Gaulle* deploys at sea. A classified number of Rafale pilots drawn from Flottilles 11F, 12F and 17F are qualified to undertake nuclear strikes from the carrier or even from a land base should the situation require it. Using the same ASMP-A missile as the FAS, the FANu can conduct nuclear strike missions from the sea, taking advantage of the carrier strike group's ability to move up to 1,000 km per day (equivalent to an average speed of 22.5kt) to be unpredictable. Although it has never been officially confirmed, it is thought the ASMP-A could also be used to engage and destroy a hostile naval task force at sea.

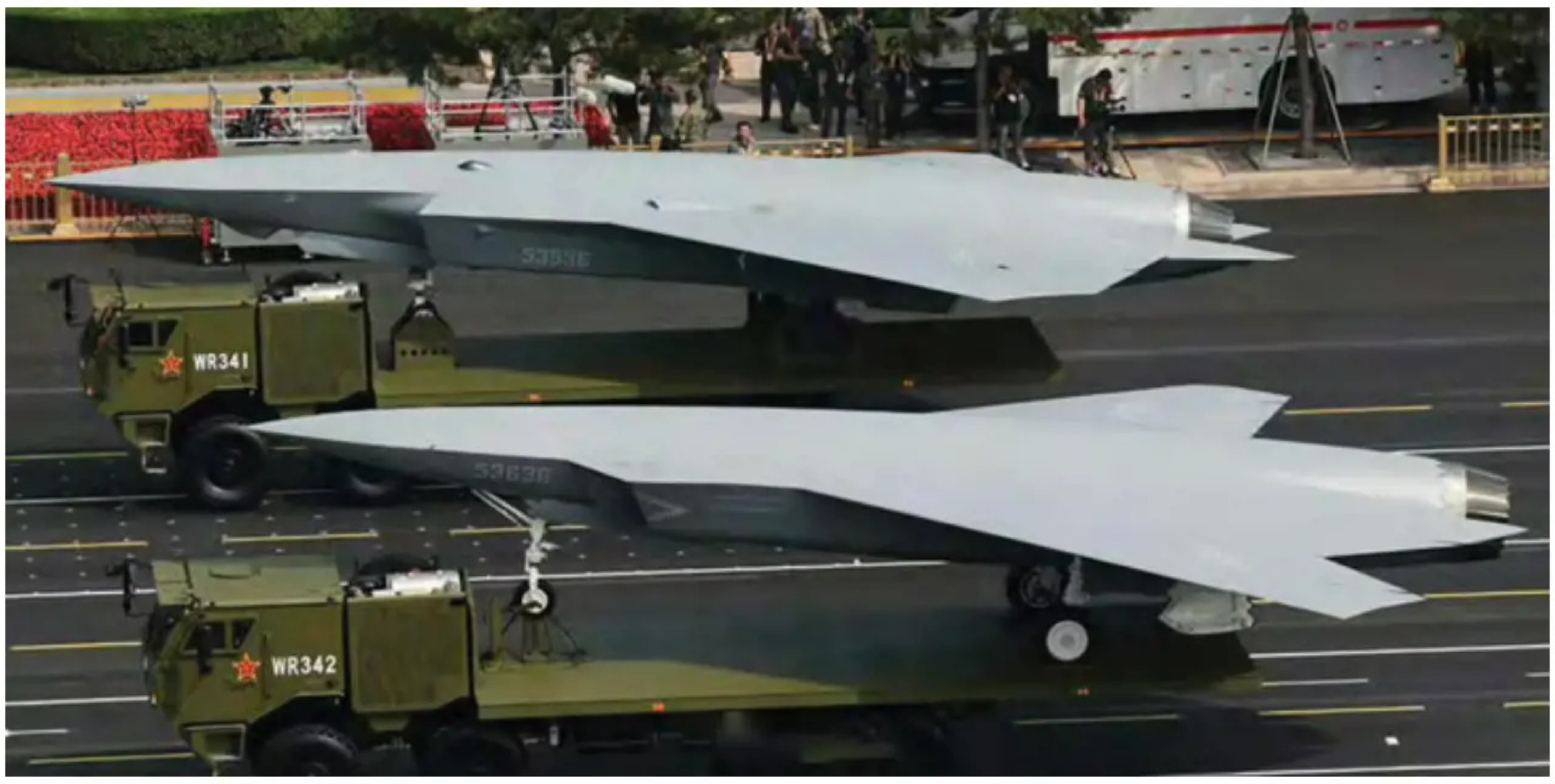
Although it is known that the flagship *Charles de Gaulle* ***carries ASMP-A nuclear missiles, it is not known when or how many are on board*** *Henri-Pierre Grollaeau*



Undoubtedly, the biggest revelation in terms of air force equipment was the unveiling of several unmanned aerial vehicles (UAVs) and unmanned combat aerial vehicles (UCAVs) including five previously unknown CCA/Loyal Wingman drones
All photos via Chinese internet

China
Victory Day Parade

Andreas Rupprecht provides an overview of the new aviation assets on display at China's recent military parade

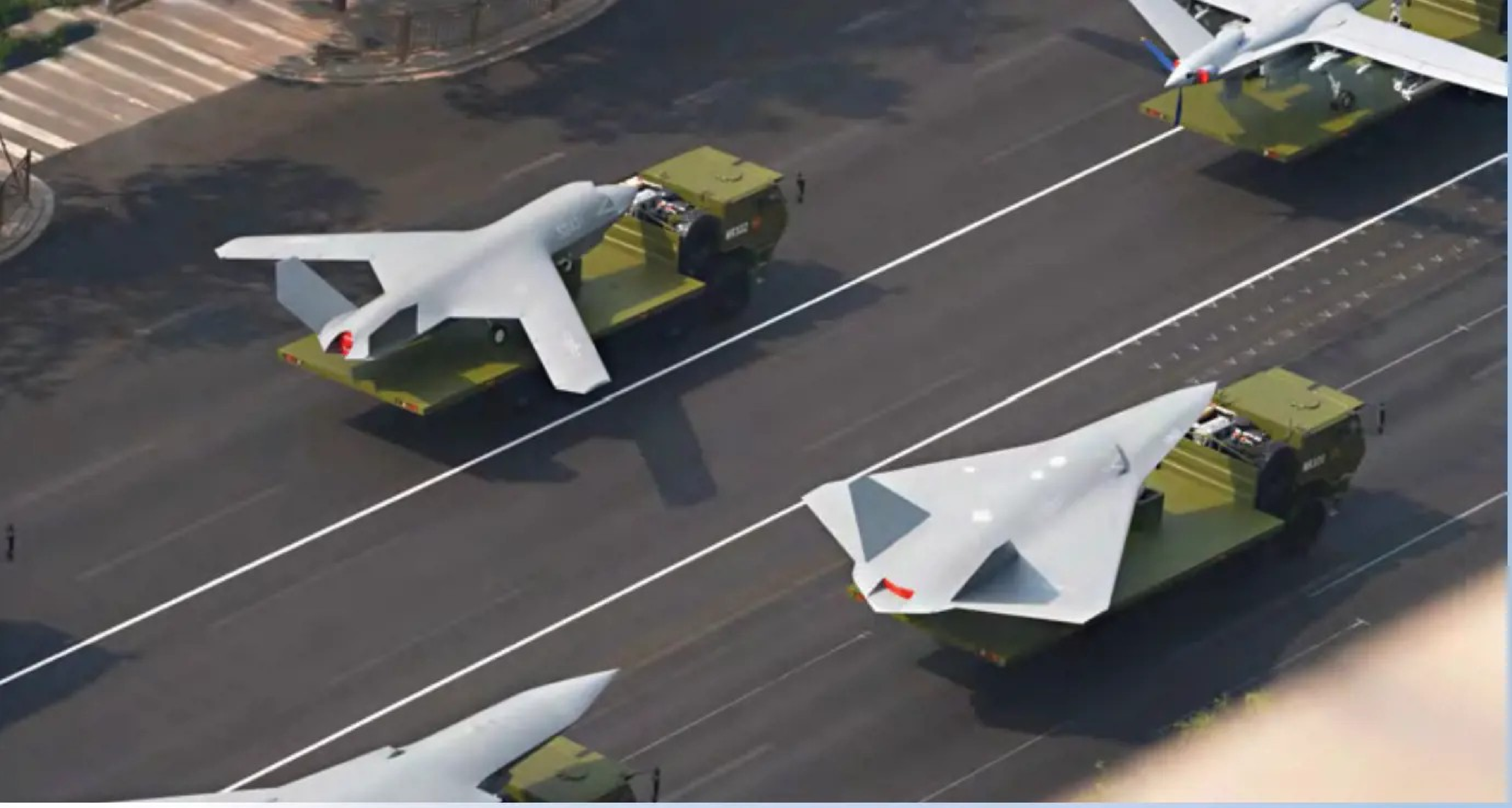


The two Type A (front) and Type B (behind) CCAs are larger than a CAC J-10 and are using both the J-20's WS-10C/C2 engines

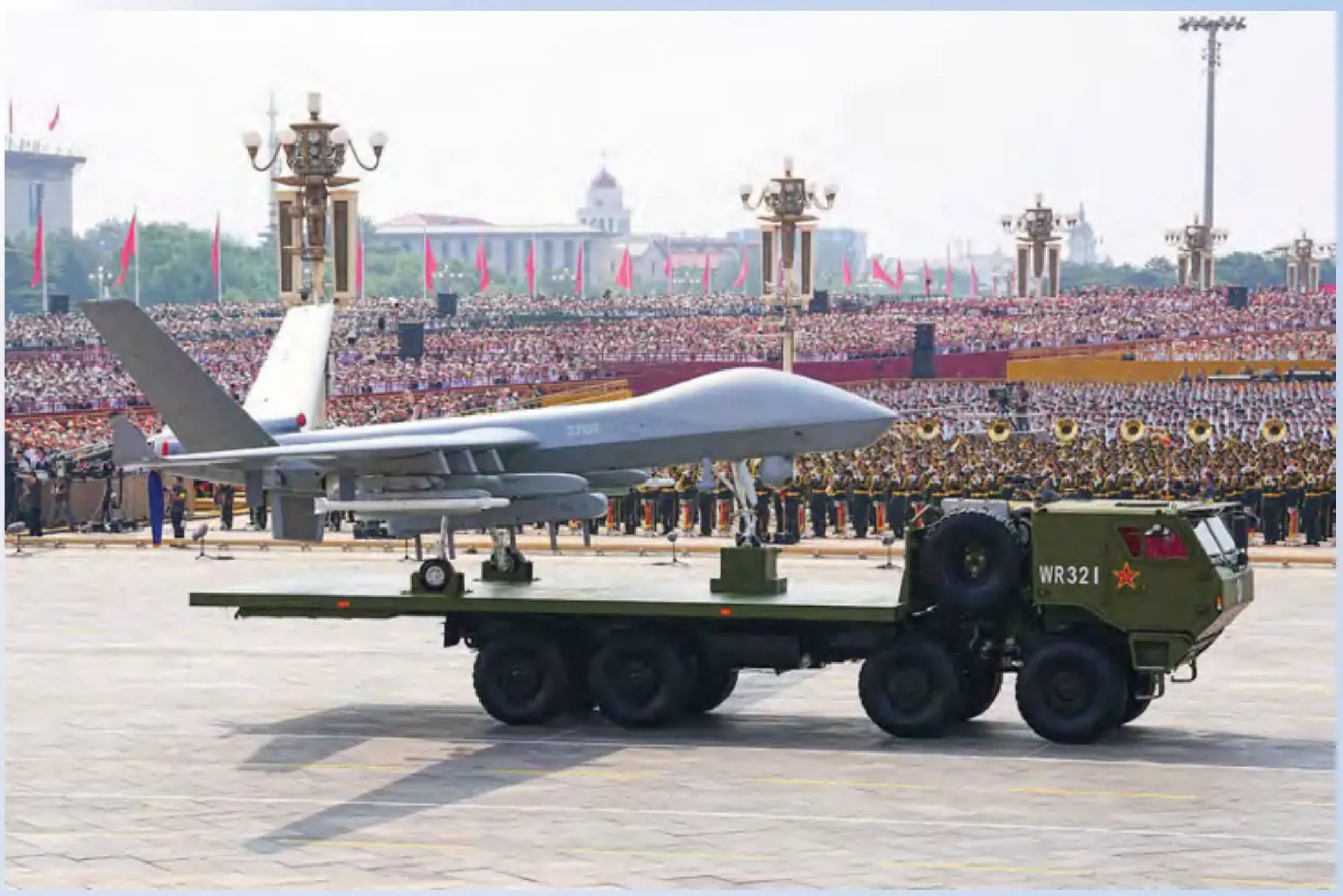
China's highly anticipated Victory Parade took place on September 3 and the sheer volume and variety of what is being created for the Chinese military did not fail to amaze.

Chinese leader, Xi Jinping showcased his country's military strength while commemorating the 80th Anniversary of the Victory of the Chinese People's War of Resistance Against Japanese Aggression. Simply, China was celebrating the 80th anniversary of the end of the Second Sino-Japanese War and the Second World War.

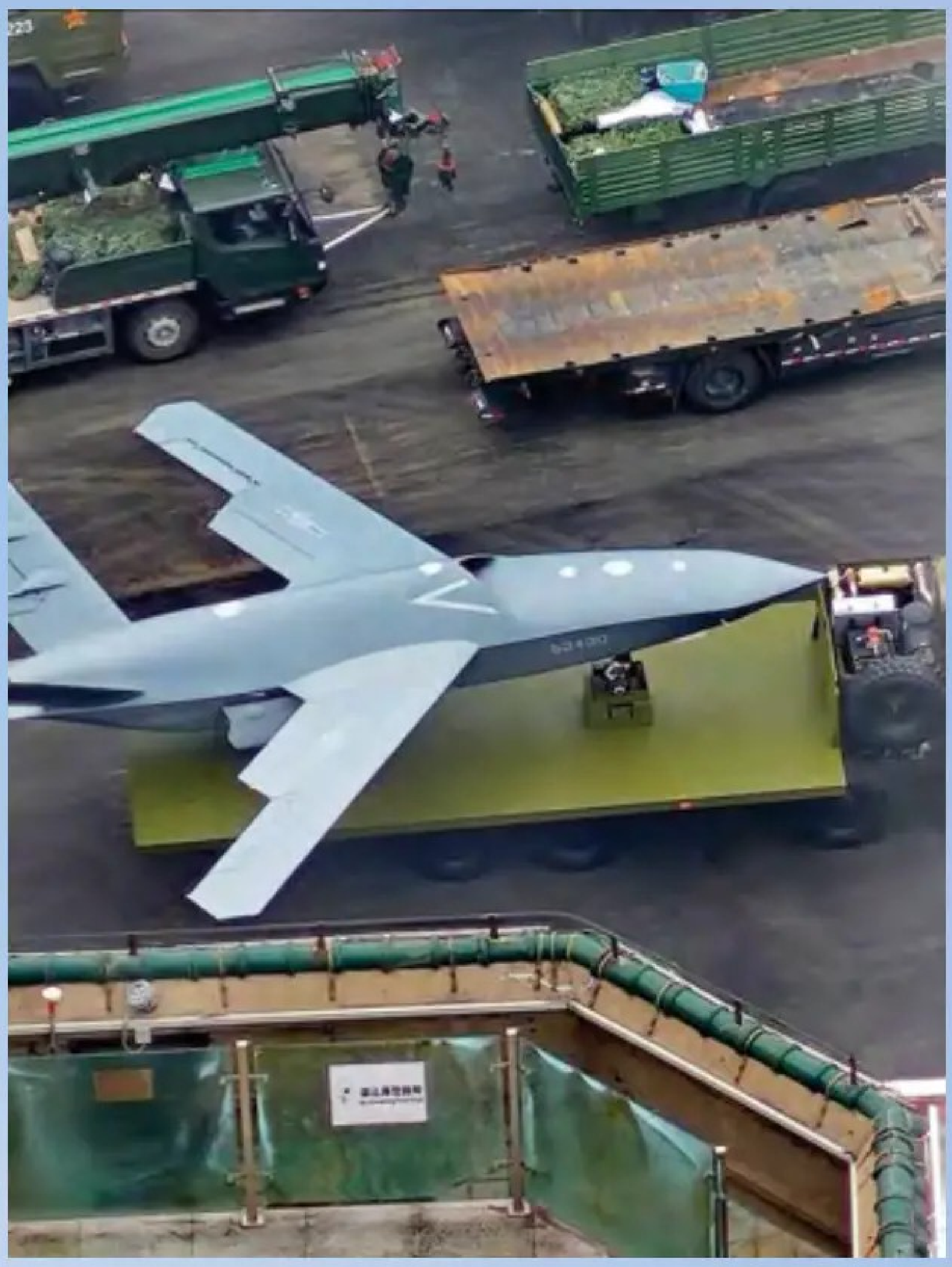
Over 12,000 troops of the People's Liberation Army (PLA) participated in the parade on Chang'an Avenue, Beijing. Besides the usual PLA Ground Forces assets, the focus this year was the presentation of several new, never-seen-before items like new missile and rocket systems. There were also several



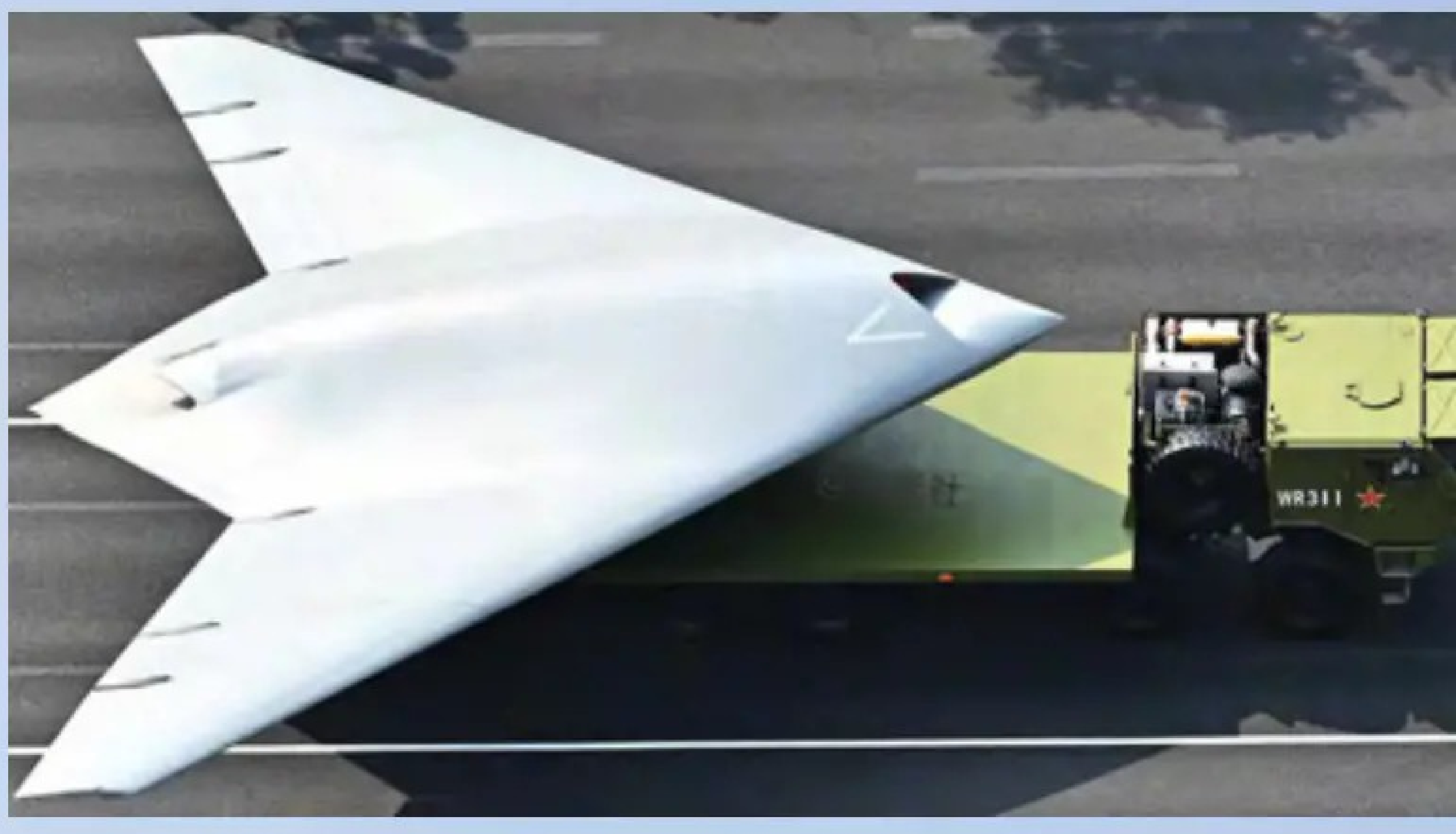
The two Type C (front) and Type D (behind) CCAs are smaller CCAs but all are real aircraft and allegedly operational within a specialised Western Theater Command UAV unit



A new variant of the well-known GJ-2 UAV with vastly increased weapons load



The Type E CCA is still the most secret one of the five types, since it was withdrawn from the parade at the last minute for unknown reasons despite being shown during rehearsals

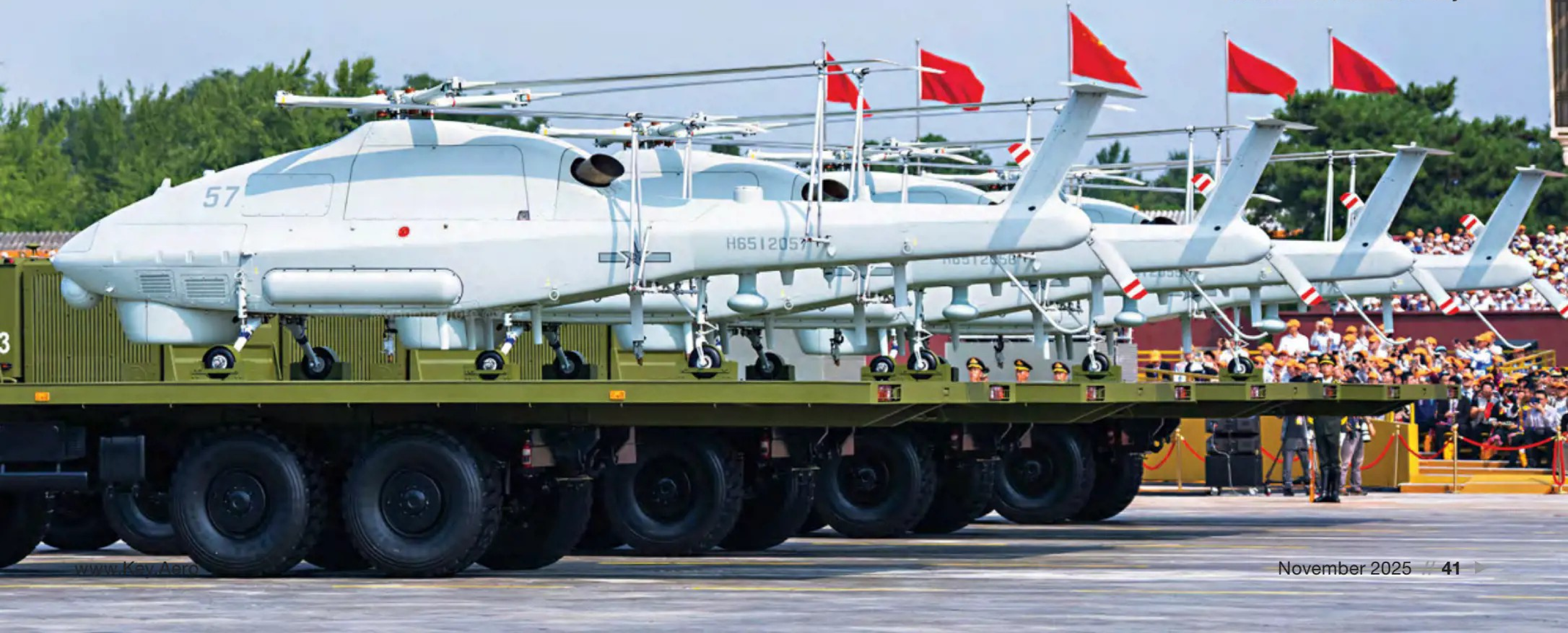


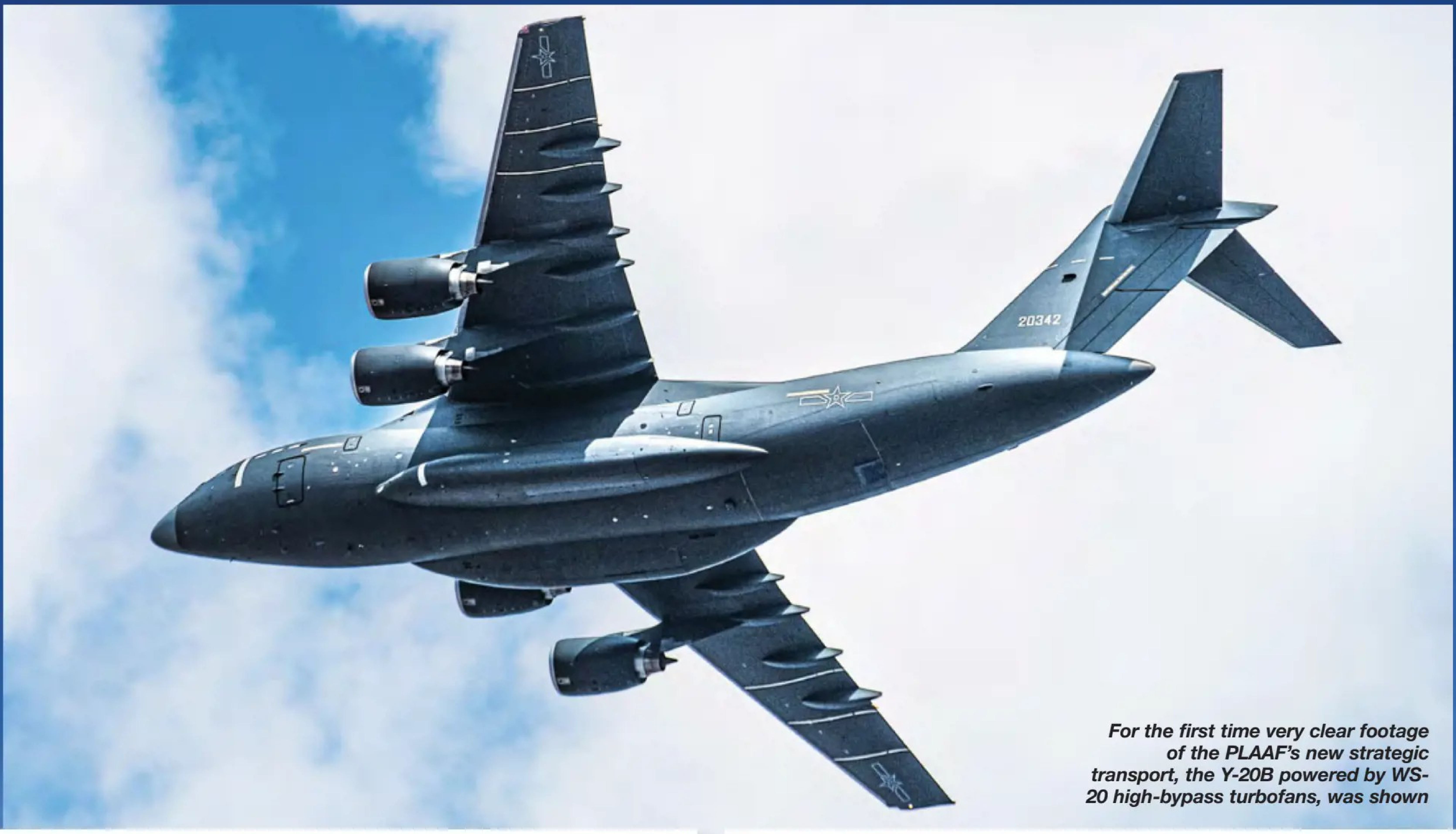
The PLAN Naval Aviation unveiled the so-far unknown naval variant of the GJ-11 UCAV likely designated GJ-21; again, this type was a real operational aircraft

important People's Liberation Army Air Force (PLAAF) and People's Liberation Army Navy (PLAN) aviation assets.

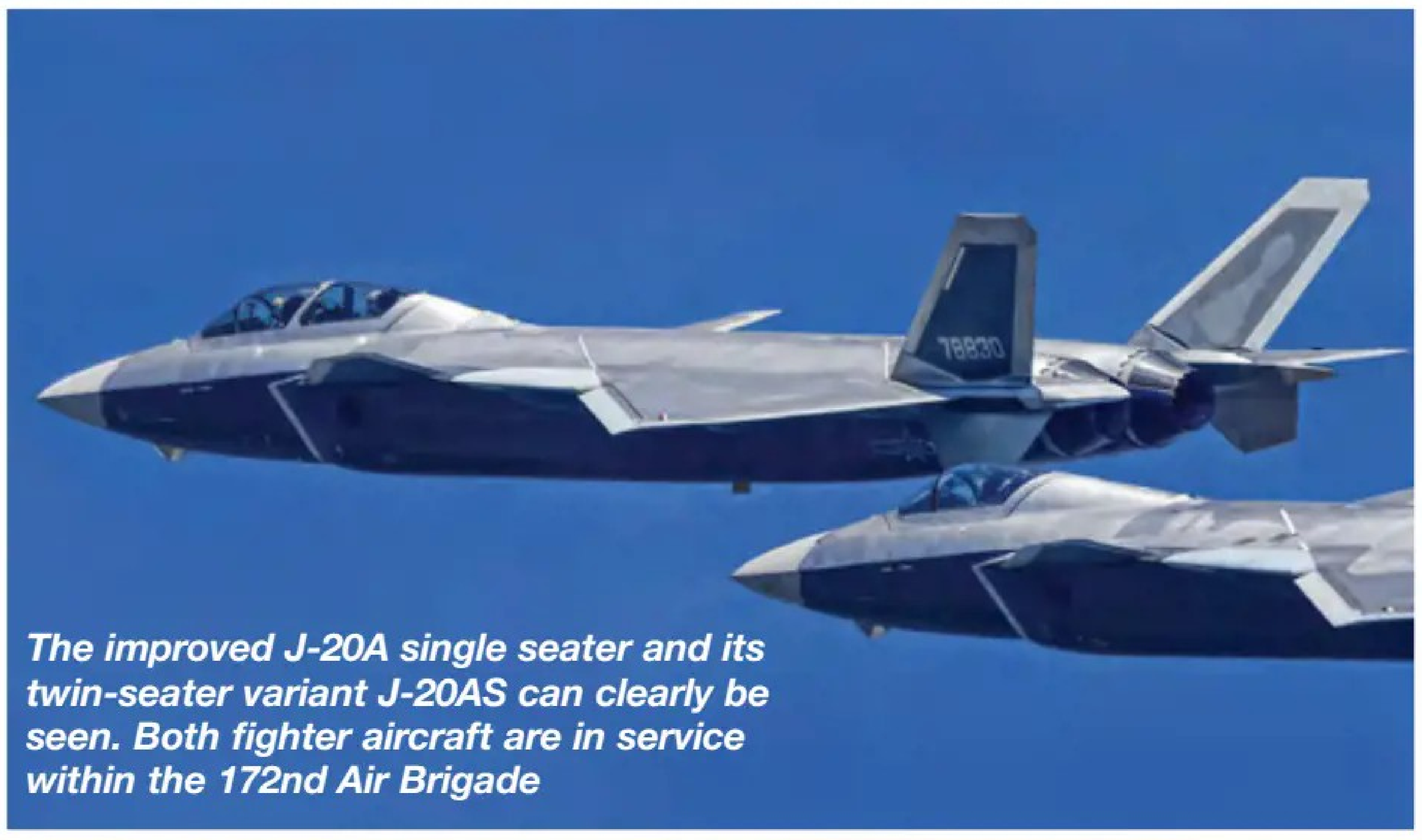
Not surprisingly, little is known about the five Loyal Wingman drones that were shown, which for now have been given the provisional designations Type A to F. These models differ in size and configuration, which in turn affects their primary operational roles. The only certainty is that all leading manufacturers are involved in their development, and at least the two larger Collaborative Combat Aircraft (CCA) have been described as Unmanned Air Superiority Fighters. **afm**

Four operational shipborne Vertical Takeoff UAVs (VTUAV), referred to as JWZ-X, were shown. These are expected to be stationed onboard the new Type 075 LHD and Type 055 DDG vessels in the Chinese Navy

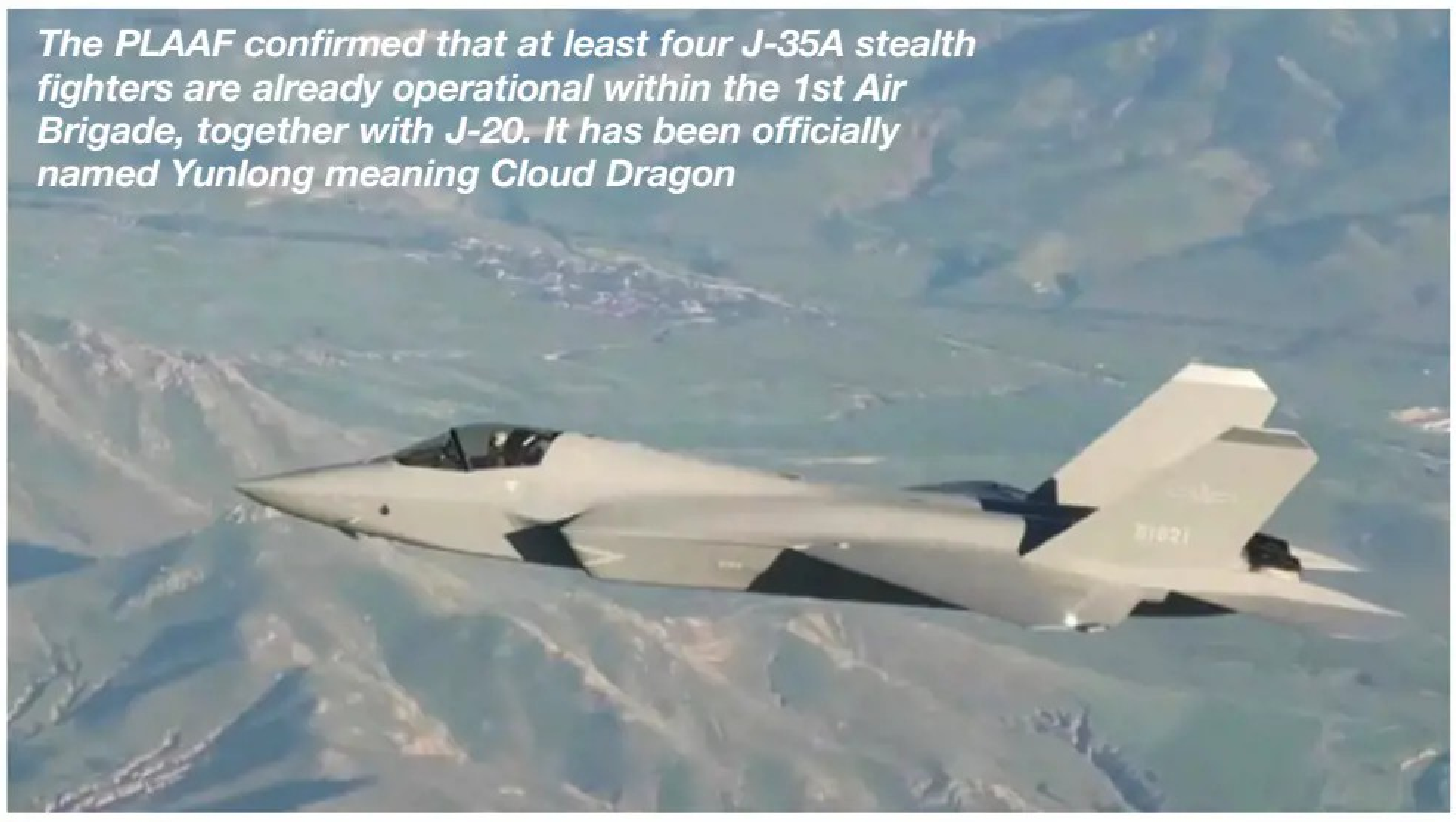




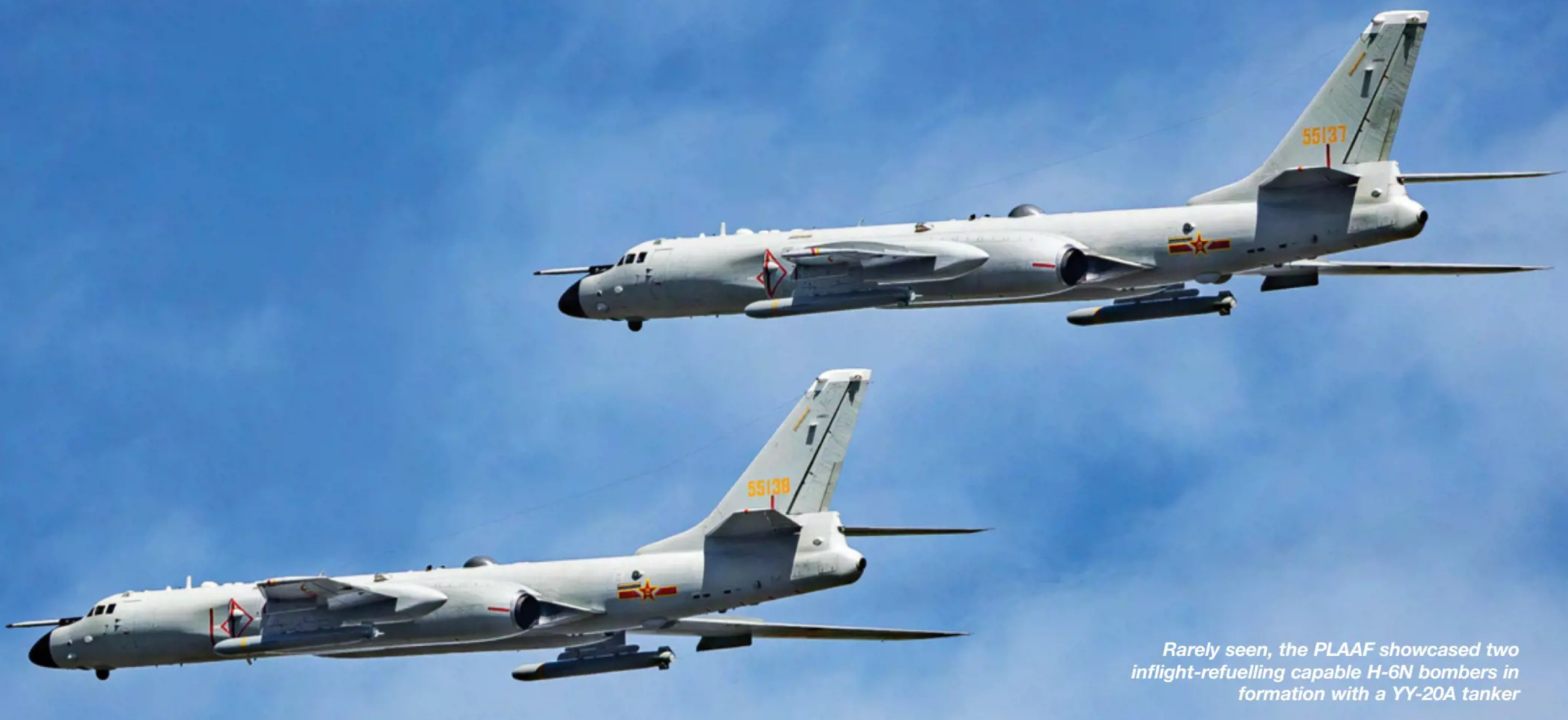
For the first time very clear footage of the PLAAF's new strategic transport, the Y-20B powered by WS-20 high-bypass turbofans, was shown



The improved J-20A single seater and its twin-seater variant J-20AS can clearly be seen. Both fighter aircraft are in service within the 172nd Air Brigade



The PLAAF confirmed that at least four J-35A stealth fighters are already operational within the 1st Air Brigade, together with J-20. It has been officially named Yunlong meaning Cloud Dragon



Rarely seen, the PLAAF showcased two inflight-refuelling capable H-6N bombers in formation with a YY-20A tanker

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BELGIAN AIRFORCE

What a no-fly zone might demand?

On August 19, US President **Donald Trump** said of Ukraine: “We’re willing to help them with things” and alluded to US air superiority. **Mina Adel** reports on what that might involve

After months of mixed messaging from the White House regarding the conflict in Ukraine, the comment by President Donald Trump that the US was "willing to help them with things", specifically regarding US air assets, sparked widespread debate on social media. Some interpreted it as suggesting the possibility of direct aerial combat between NATO and Russia, while others understood it to merely suggest a peacekeeping and deterrence operation not intended to provoke a clash with President Putin.

This ambiguity raises concerns about future scenarios, especially if a NATO member state were to be attacked. According to Article 5 of the treaty, such an event would require a swift response from European and American air forces. However, how could this be executed, using the current situation in Ukraine as an example?

To answer this question, *AFM* reached out to experts – including those who have participated in similar missions, whether on the NATO side or against it – to gain deeper insight into the nature of these operations and how they are carried out. We spoke with RAF Air Marshal (Ret) Greg Bagwell, who was the UK's Joint Force Air Component Commander for Operation Ellamy in Libya in 2011, along with Mike Mihajlovic, a former Serbian air defence operator and author of several books on air defence systems and Pierre-Henri Chuet, a former French Navy Rafale pilot and the founder of the D.Brief organisation.

Why is it essential?

At the onset of Russia's invasion of Ukraine, a devastating preparatory bombardment severely crippled Ukraine's air defence systems. In response, Ukrainian fighter jets took to the skies, flying deep into national territory to launch counter strikes against a range of targets.

Despite the technical and numerical superiority of the Russian forces, their missions largely failed – not due to lack of effort, but because of the extraordinary courage of Ukrainian pilots. Operating under relentless bombardment, these aviators launched from both primary airbases and improvised runways scattered across the country, employing the agile combat employment (ACE) concept. Their co-ordinated actions in asymmetric aerial engagements played a pivotal role in buying time for Ukraine's air defences to regroup and re-establish operational coherence. Gradually, their sacrifices and tactical bravery deterred Russian aircraft from penetrating deep into Ukrainian airspace.

NATO jets fly in formation during NATO's Atlantic Trident 25 exercise, showcasing ACE tactics and multinational co-ordination *HAF*

Above: ***Finland is one of the countries where implementing the IAPZ strategy might become essential for its protection in the event of an invasion*** *USAF/Airman 1st Class Bridget Rossignol*

Faced with mounting resistance, Russia adapted its strategy by shifting to long-range precision munitions. This included the deployment of UMPK-guided bombs, cruise missiles such as Kalibr and KH-55/101/22 and tactical ballistic systems like Iskander and Bastion. Among the most controversial additions to Russia's arsenal were Shahed-136/Geran-2 drones, often accompanied by decoy UAVs to saturate Ukrainian defences.

These systems were integrated into complex strike packages designed to overwhelm Ukrainian air defences and exhaust their limited stockpile of advanced missiles. With a small fleet of combat aircraft and restrictive rules of engagement – where each jet could engage only one target at a time – Ukrainian pilots faced immense challenges. The small size and erratic flight profiles of loitering munitions demanded exceptional skill and high-risk manoeuvres. Several Ukrainian aircraft were lost during these perilous missions, underscoring the brutal cost of defending national airspace in a technologically lopsided war.

Russia has achieved notable success through its current aerial warfare strategy, which it continues to employ without risking confrontations with Ukrainian fighter jets or exposing itself to Ukraine's increasingly effective air defences. By intensifying daily strikes and steadily depleting Ukraine's stockpile of advanced munitions, Moscow appears to have found its operational sweet spot.

NATO's integration-focused drills, such as Air Defender 23, play a key role in strengthening the capabilities behind the IAPZ strategy's success *Luftwaffew*

This approach – centred on long-range, low-cost precision weapons and loitering munitions – has not only proven effective in Ukraine, but has also been echoed in the Iranian-Israeli confrontations. China, closely observing these developments, is actively working to enhance similar systems by integrating artificial intelligence, aiming to make them deadlier while maintaining affordability.

On the other side of the strategic equation, NATO has taken serious note. Recognising the future threat posed by such tactics, the alliance has begun revising its aerial training doctrines. These now include counter-drone and cruise missile scenarios, with a focus on diversifying defence systems and optimising cost-effectiveness without compromising combat performance. The overarching goal is to reinforce the concept of effective air superiority while minimising exposure to emerging threats.

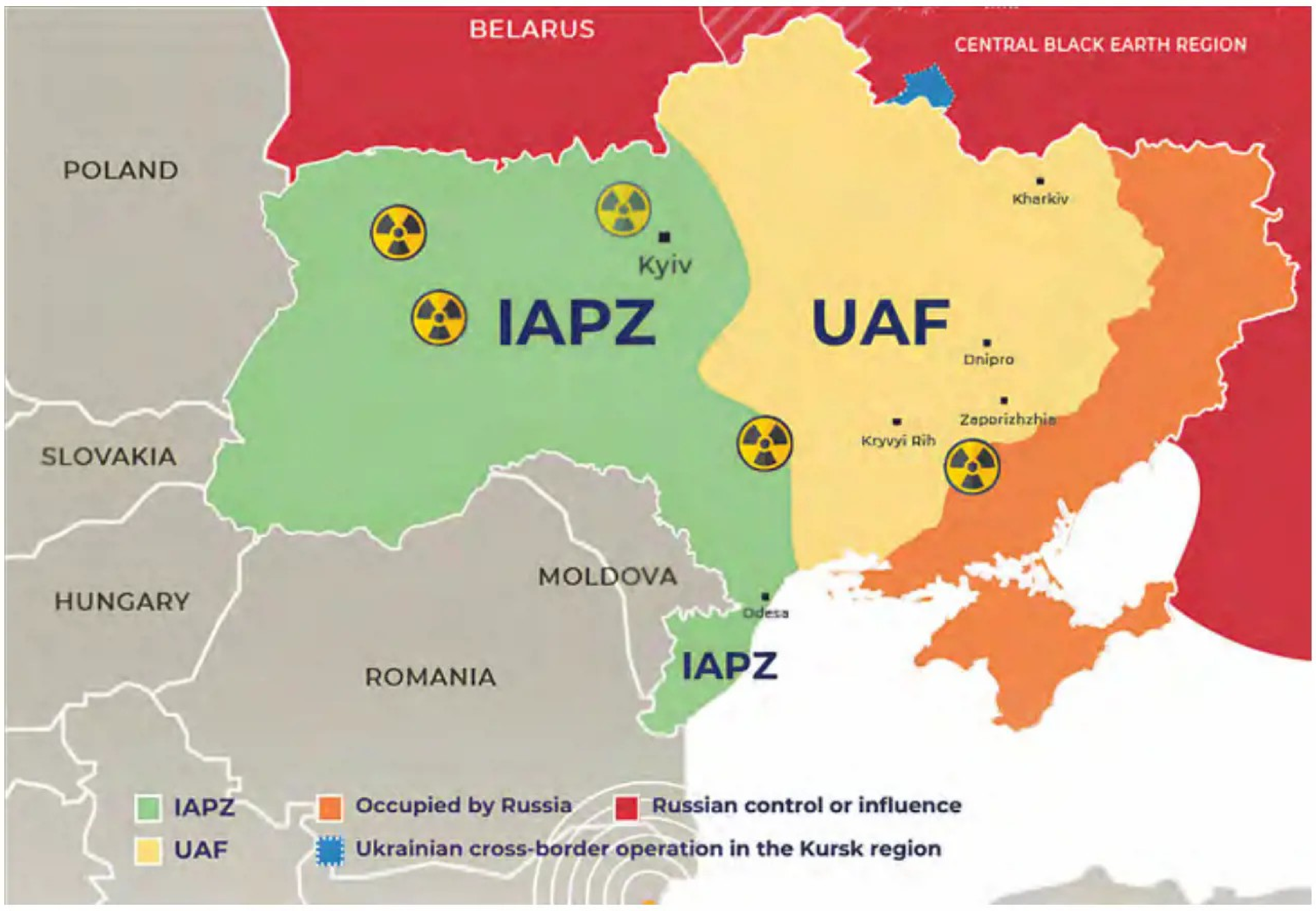
Integrated Air Protection Zone

On March 6, 2025, a group of former RAF planners, in close co-ordination with Ukraine's armed forces, introduced the so-called SkyShield strategy. Although it is not an official NATO plan, it has been welcomed by several Western leaders and military figures.

The primary objective of SkyShield is to establish an Integrated Air Protection Zone (IAPZ), which employs combat air patrols (CAPs) over uncontrolled areas of Ukraine. SkyShield's principal mission is to protect western Ukrainian airspace from cruise missiles. The combat aircraft involved will fly from European airbases and closely co-ordinate with the Ukrainian Air Force (UAF).

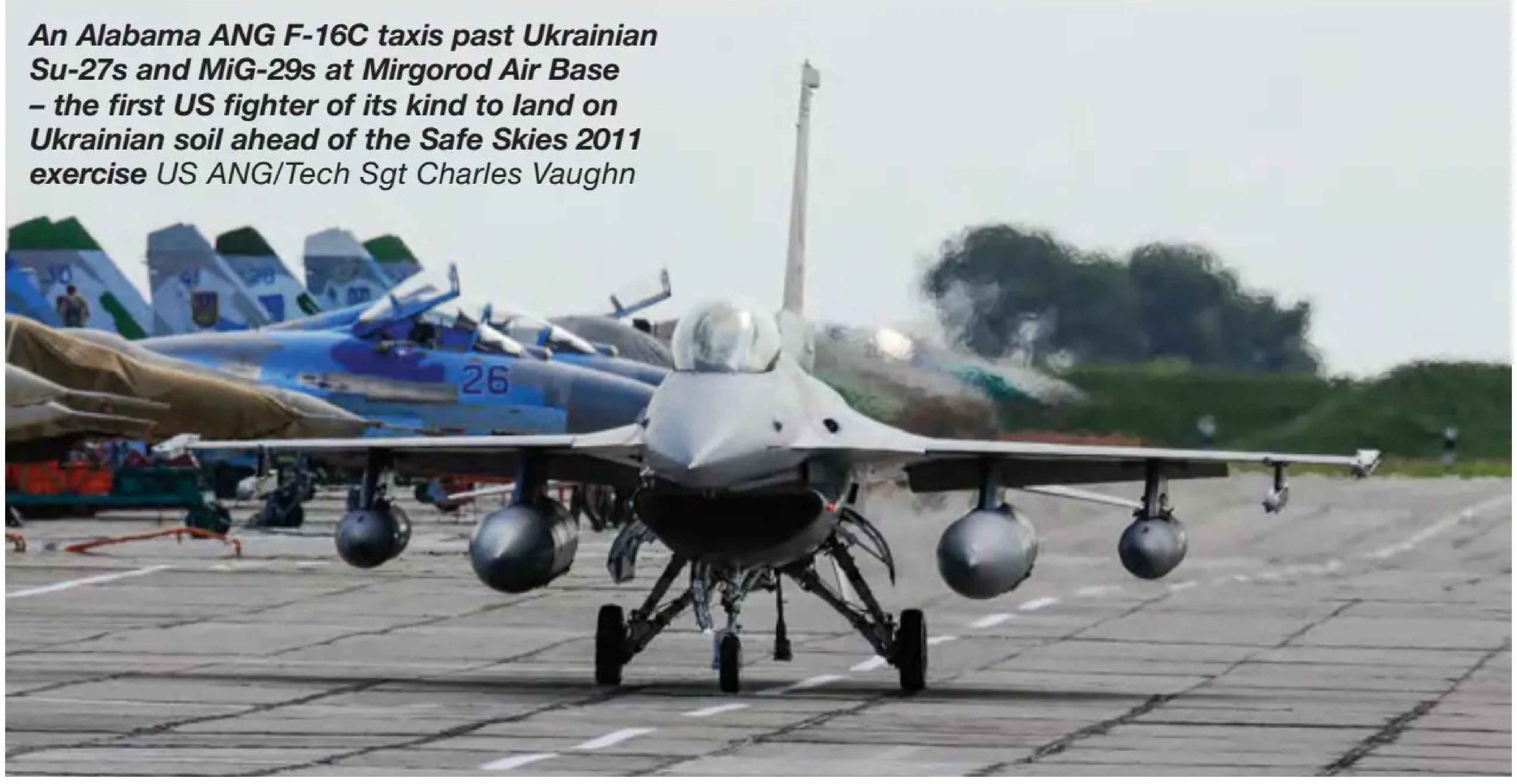
SkyShield is designed to be one of the principal building blocks of a broader strategy to defend Ukraine and to ensure its future resilience and prosperity, with the reintegration of all occupied territories in mind. It also weakens Russia militarily without increasing the risks of nuclear escalation to achieve a stable armistice by mobilising just 120 F-16s, F-16 AM/BMs or an "operational equivalent" provided by squadrons of other aircraft types (eg, F-35s, Mirages, Eurofighter Typhoons, JAS 39 Gripens) flying from European airbases. AEW&C, tanker aircraft and various types of specialised support aircraft will also be required, as well as ISR, EW, cyber protection and other assets and capabilities.

The strategy centres on anchoring Ukrainian fighter jets and air defence systems in direct,



Left: ***The Integrated Air Protection Zone (IAPZ) strategy for securing Ukrainian airspace and supporting the air force in their daily effort to defend their homeland***

France deployed three Rafale fighters to Poland to reinforce its air force against missile and drone threats following last month's incursion by Russian UAVs FAF



An Alabama ANG F-16C taxis past Ukrainian Su-27s and MiG-29s at Mirgorod Air Base – the first US fighter of its kind to land on Ukrainian soil ahead of the Safe Skies 2011 exercise *US ANG/Tech Sgt Charles Vaughn*

sustained confrontations with Russian aircraft, munitions and loitering drones along the front lines. By relieving these units of the burden of protecting rear areas, the approach grants them operational freedom and allows for the deployment of concentrated forces where they matter most.

This tactical realignment is expected to enhance combat effectiveness at the front, while simultaneously improving the efficiency of rear-area defences. The shift is further reinforced by more robust electronic and intelligence support from specialised units, now capable of seamless integration with Western-built Ukrainian aircraft and air defence systems via Link-16 data connections.

Greg Bagwell explained: "Any peace will need a degree of air control to monitor and deter. The mission would be to police the airspace of western Ukraine and intercept any missile or drone attacks in that area (similar to the actions against Iran last year). This would both alleviate pressure on Ukraine and establish the beginnings of a monitoring mission. In addition to providing an overwatch and interception function, it could also serve as an umbrella to support and mentor the Ukrainian Air Force as it adapts to Western equipment, tactics, and techniques.

"I envisage such a task to absorb a couple of squadrons worth of air defence aircraft at any one time, establishing circa 3-4 patrol orbits, which would require tanker and AEW support. Assets would rotate every few months to sustain a presence indefinitely. In terms of working out how to segregate the airspace, how to have the right sensors in the right places to detect what's going on and then to have the rules of engagement and the right things in the right places to intercept or investigate or warn off. If it gets really 'sticky', those are well-worn procedures that you have to apply and adapt to the specific circumstances."

Sword and shield

Emerging concepts for future no-fly zone operations – whether in Ukraine or any other nation facing aggression – are increasingly defined by a two-phase approach to the battlefield. The first and most critical phase involves establishing a firm line of engagement to deter enemy aircraft and suppress their ground-based capabilities if mobilised. Once this line is stabilised, the second phase focuses on securing the airspace against incoming munitions, mirroring the principles of the previously discussed Integrated Air Protection Zone (IAPZ) strategy.

The most dangerous challenge lies in successfully executing the first phase: deterring enemy air forces, particularly tactical and strategic bombers, from launching high-intensity strikes aimed at deep targets. These attacks often rely on numerical superiority and overwhelming firepower to inflict large-scale destruction.

In response, NATO has intensified its aerial training programmes, with a focus on the ACE concept. This doctrine enables combat units to rapidly deploy to the battlefield, sustain operations with a minimal logistical footprint and maintain a high operational tempo. The primary objective is to disrupt enemy air campaigns and prevent them from escalating.

One of the most prominent recent examples of such exercises was Atlantic Trident 25, held in June 2025. The exercise aimed to develop further ACE tactics, techniques and procedures, as well as aircraft cross-servicing and integration among fourth- and fifth-generation fighter jets, such as the Finnish F/A-18 Hornet. Other participating air assets included an E-3F AWACS aircraft, Rafale jets, an A400M transport aircraft and an A330 MRTT tanker from France, RAF Typhoons, and USAF F-35A Lightning II, F-15E Strike Eagles and KC-135 Stratotanker aerial refuelling aircraft. The exercise also involved NH90 helicopters and ground-based air defence units from the Finnish Army.

Pierre-Henri Chuet noted: "What was new in this edition was the creation of a C2 Command and Control centre and especially the preparation for the relocation of activity. We discussed aeronautical warfare, which sometimes requires loosening up, such as relocating planes to other bases due to threats. This is something that was worked on exceptionally well during Atlantic Trident and it's an excellent development.

"That high intensity is massive. It's in several environments, it's multi-field, it's a very sustained operational timeframe in a very short time. For that we must also prepare for attrition, for losses. And that's why in this exercise, they practiced relocating, changing terrain, and we also saw that there were air engineers who were there to practice repairing runways, which is necessary because we expect them to be attacked.

"On the other hand, none of these mention the operational work that happens at the

A USAF F-15C Eagle moves past Ukrainian Su-27s during Clear Sky 18, a joint exercise aimed at strengthening US-Ukraine air interoperability *US ANG/Tech Sgt Charles Vaughn*

Russia's layered air defence system functions as a protective wall, using long-range coverage to shield ground forces, often serving as an alternative to air support *Russian MOD*

end of the chain. In high-intensity scenarios, you also need the stockpiles to support operations. For example, they deployed six Rafale jets. So let's do a little maths: if each Rafale carries six missiles per mission and all of them fire, that is 36 missiles in total. If they fly three missions and fire each time, that's more than 100 missiles. You might say – as I would have said 15 years ago – 'That will never happen.' However, I encourage you to look up in open sources how many missiles France actually has.

"Just a few days ago in Ukraine, the Ukrainians were attacked using 574 drones and 40 missiles. If you chose to respond using MICA missiles against drones, then after two or three days you'd run out of missiles. I'm telling you this because it carries an essential message: what you see in the images is just the final stage of a long chain. To make all of this possible, you need a defence industry [see page 34-39], you need budgets and you need anticipation – not just for equipment production but, more importantly, for human resources."

Challenges ahead

Under the ACE concept, air units would rapidly deploy to integrate with the air force and air defence systems of the nations under attack, forming a unified combat scenario until additional aerial support arrives. However, to assess this realistically, one must consider the likely reactions from adversaries. Undoubtedly, hostile forces would seek to undermine this aerial effort by taking measures aimed at disrupting its momentum and sustaining the effectiveness of their own air campaign.

Mike Mihajlovic explained: "NATO's qualitative edge in aircraft technology could compensate for numerical and geographical disadvantages. It is true that Western fighters, such as the F-35 and F-15EX, bring advanced sensor fusion and munitions. However, superiority in isolated engagements does not necessarily translate into the ability to dominate the entire battlespace. Russian doctrine emphasises massed salvos of long-range surface-to-air missiles combined with electronic jamming and decoys."

There are many challenges to establishing a no-fly zone, which requires first achieving air supremacy over the entire contested airspace. This would necessitate suppression or destruction of Russian integrated air defence systems (IADS), many of which are stationed not only within Ukraine but also across the border in Russia and Belarus. Systems such as the S-300, S-350 and S-400 create overlapping zones of coverage that extend deep into Ukrainian airspace. To neutralise them, NATO aircraft would have to strike targets on sovereign Russian and Belarusian territory.

The second technical barrier lies in the sheer scale of the Russian Air Force. Russia fields hundreds of combat aircraft in its Western and Southern Military Districts, ranging from Su-30SM and Su-35S fighters to Su-34 strike aircraft and MiG-31 interceptors. Long-range surface-to-air missile coverage, airborne early warning platforms and extensive electronic warfare assets support these aircraft. NATO's European members do not possess enough combat air patrol assets to simultaneously enforce a no-fly zone over all of Ukraine while defending their own borders. For comparison, during Operation Allied Force against Serbia in 1999, NATO conducted around 38,000 sorties over a much smaller country with no peer-level air defences. Ukraine is nearly ten times larger in area and the adversary is not a small regional state but one of the world's most significant military powers.

Third, any no-fly zone also requires constant refuelling, maintenance and basing support. NATO tankers and airborne early warning aircraft would have to orbit within range of Russian long-range missiles, making them highly vulnerable. Forward bases in Poland, Romania and Slovakia would be within reach of Iskander ballistic missiles and Kalibr cruise missiles, forcing NATO either to accept massive risk or to commit to pre-emptive strikes on Russian launch systems. In either case, sustaining a no-fly zone would demand a level of logistical depth and political willingness that does not exist.

In conclusion

NATO already possesses executable plans and technologically superior combat units capable of deterring and protecting member states or allies under threat. However, it is equally evident that adversaries, in their potential expansionist campaigns or aggression against neighbouring countries, will likely adopt strategies aimed at creating operational obstacles for NATO's combat forces. These strategies would rely on operating within their own territorial boundaries using long-range systems – whether defensive or offensive – alongside political constraints designed to limit NATO's options and rules of engagement. This would push NATO towards confrontation and the necessity of neutralising threats at their source, often within hostile borders. The alternative lies in ramping up domestic military production of defensive munitions and missiles or developing more cost-effective systems that maintain combat effectiveness – especially those capable of engaging multiple targets simultaneously. **afm**

Depletion of NATO's missile stockpile has made low-cost alternatives like the AGR-20F essential – as seen here being tested on an Eglin Test F-15E Strike Eagle *USAF/Staff Sgt Thomas Barley*

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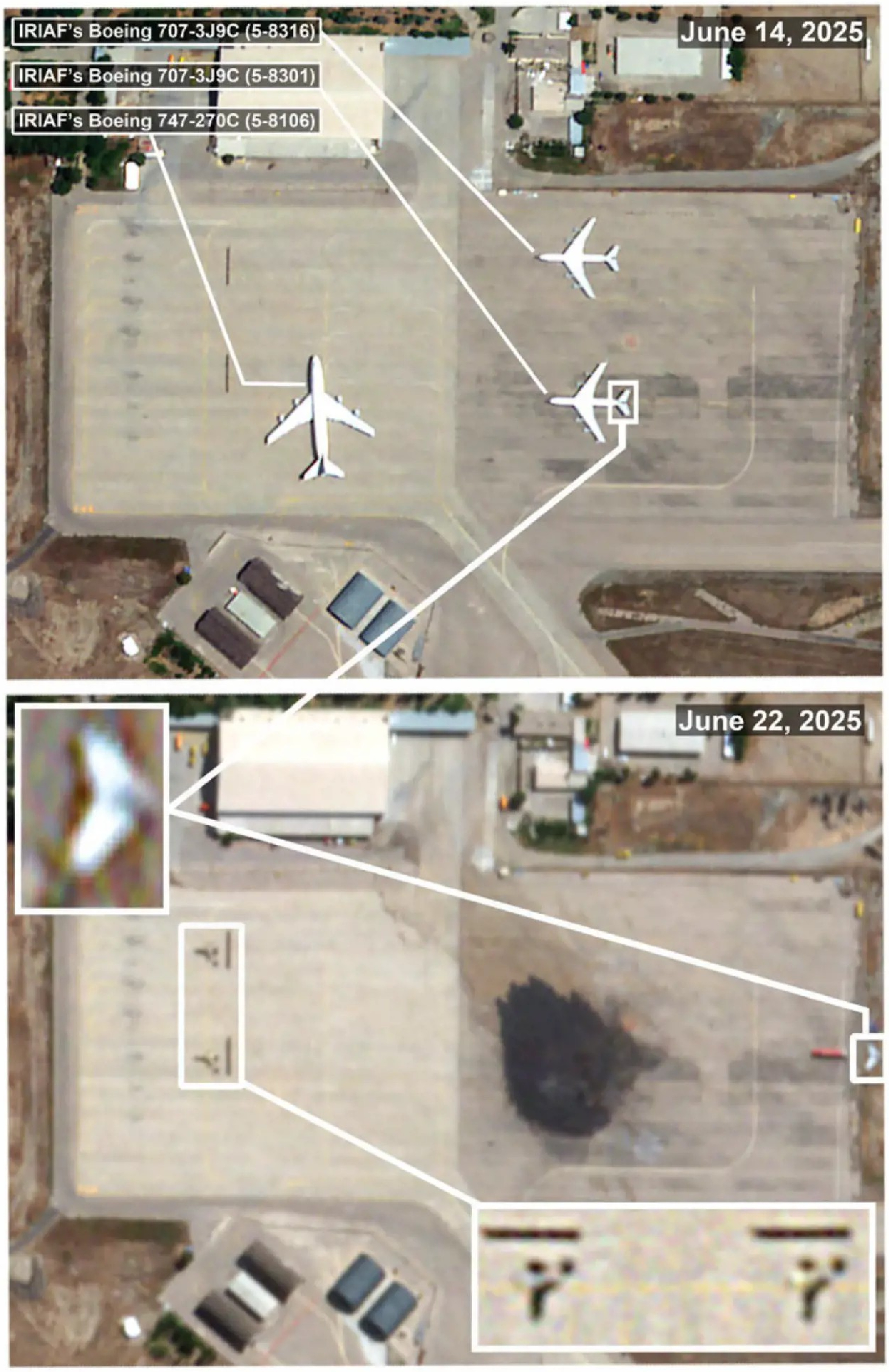
Time *to* HIDE

Babak Taghvaee takes an in-depth look at the 12-day war between Iran and Israel in June, initiated by the Israeli Air and Space Force and escalated by the United States


IRIAF's Boeing 707-3J9C (5-8316)
IRIAF's Boeing 707-3J9C (5-8301)
IRIAF's Boeing 747-270C (5-8106)
June 14, 2025
June 22, 2025

Left: Mashhad forward operating base, June 14, 2025: IRIAF Boeing 747-270C (5-8106), KC-707 (5-8301), and RC-707 (5-8316) after evacuation. By June 22, burn marks from the KC-707 destroyed on June 15 were visible, along with dummy F-5s deployed for deception
Satellogic/Skyfi, analysis by Babak Taghvaee

The war between Iran and Israel that took place between June 13-25 this year, represented a significant escalation in regional conflict dynamics. The situation was intensified by the United States' involvement, culminating in the destruction of three Iranian nuclear facilities on June 22. Amid the intense airstrikes, drone incursions, and ballistic missile exchanges, both nations implemented strategic measures to safeguard their military and civilian aviation assets.

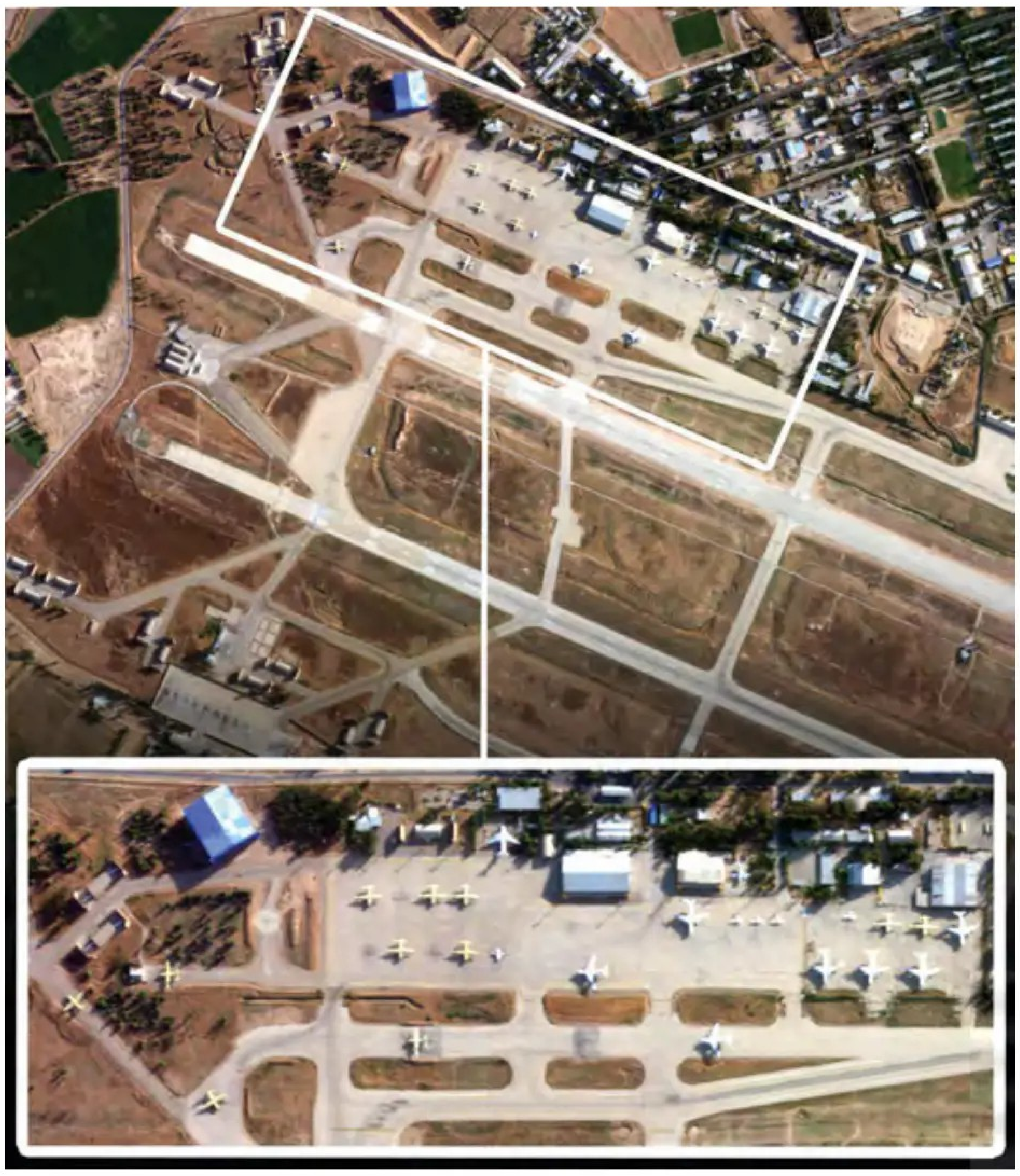
Israel, facing immediate threats, managed a fleet of almost 70 passenger aircraft of four airlines, one VIP aircraft, and 21 Israel Air and Space Force (IASF) tanker and transport aircraft, which were vulnerable during the conflict. Some passenger aircraft, airborne at the war's onset, were diverted to various European airfields and airports. In contrast, others on the ground were evacuated from Israel, and IASF tanker and transport aircraft were relocated to secure airfields within Israel.

At the same time, Iran relocated 139 passenger aircraft from 26 airlines, alongside a substantial number of Islamic Republic of Iran Air Force (IRIAF) and Islamic Revolutionary Guard Corps Aerospace Force (IRGCASF) tanker, transport, special mission aircraft, VIP aircraft, fighter jets, and helicopters to eastern and northeastern Iran, with further evacuations to Oman and Pakistan.

Phase One: Operation Rising Lion and the Iranian Aviation Evacuation

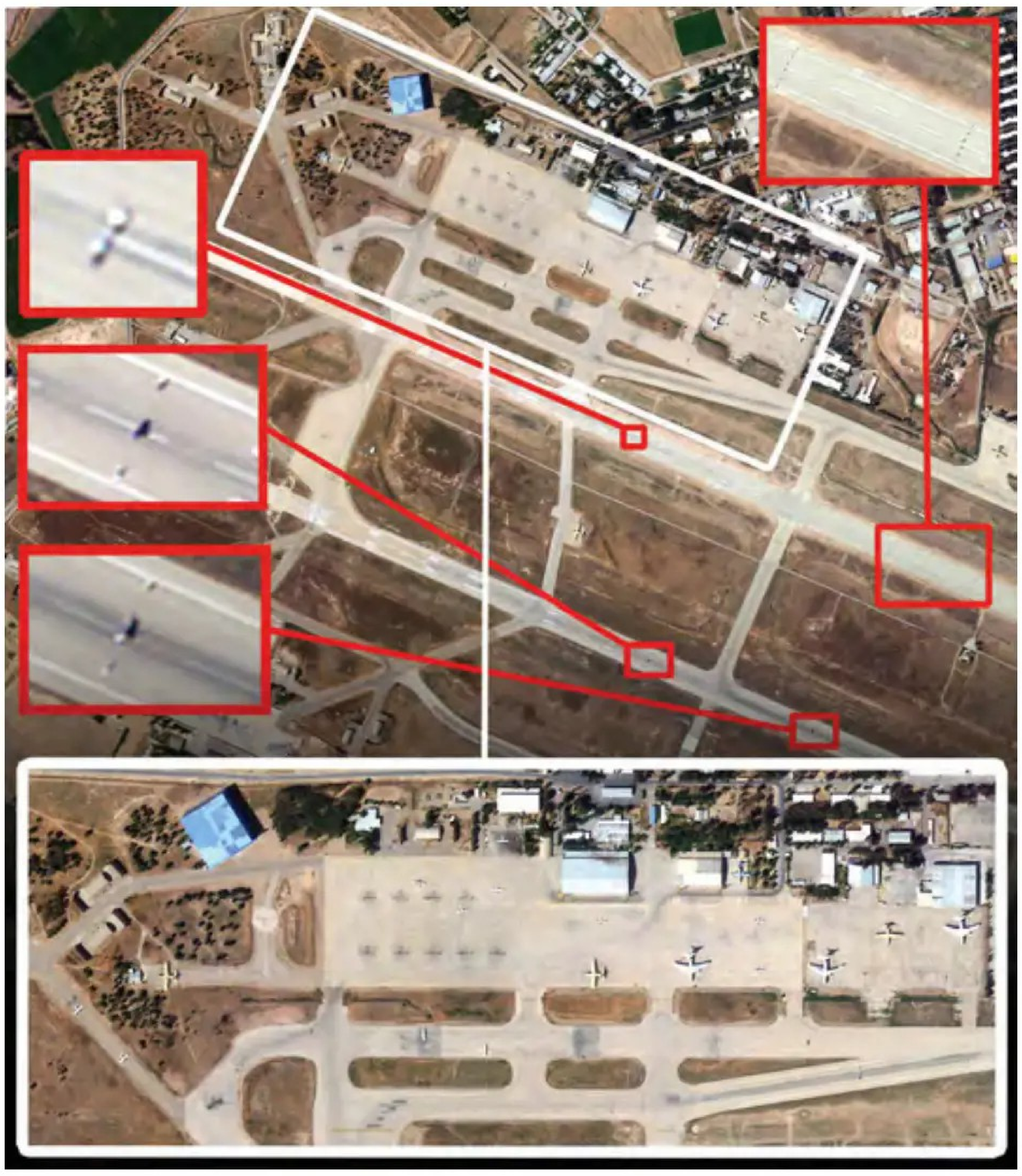
In the early hours of June 13, 2025, the IASF, co-ordinating with Mossad, launched Operation Rising Lion, the opening salvo of the 12-day war against the Islamic Regime of Iran. The operation was executed simultaneously with Operation Narnia, a Mossad-led sabotage campaign targeting senior Iranian military leaders and nuclear scientists. Mossad Joint Terminal Attack Controller (JTAC) teams, already positioned deep within Iranian territory, provided critical targeting support. Among the early objectives were the homes and private residences of Major General Mohammad Bagheri (Chief of Staff of the Armed Forces), Major General Hossein Salami (Commander of the Islamic Revolutionary Guard Corps), and Brigadier General Amir Ali Hajizadeh (Commander of the IRGC Aerospace Force), as well as several nuclear scientists based in Tehran.

The opening phase of Operation Rising Lion focused on the Suppression and Destruction of Enemy Air Defences (SEAD/DEAD), eliminating what remained of Iran's radar and missile defence network that had survived the IASF's Operation Days of Repentance conducted on October 26, 2024. While the previous operation had focused on the destruction of the Islamic Republic of Iran Air Defence Force (IRIADF)'s long-range S-300PMU-2 systems in Tehran, Rising Lion targeted remaining long-range sites alongside medium- and short-range air defence systems protecting sensitive military and nuclear infrastructure. In addition to SAM sites, the key early warning radar stations operated by both the IRIADF and the IRGC Aerospace



Top Left: **BEFORE**

Satellite image of Shiraz Airport, June 12, 2025, shows six airworthy IRIAF C-130E/Hs, three Il-76TDs, five grounded C-130s, and five grounded Il-76s at 7th TFB *Satellogic/Skyfi, analysis by Babak Taghvaee*



Top Right: **AFTER**

Satellite image of Shiraz Airport on June 22, 2025, hours after Operation Midnight Hammer, shows runways blocked by vehicles to prevent Israeli/US special forces landings. Airworthy C-130s and Il-76s had already been evacuated to Pakistan *Satellogic/Skyfi, analysis by Babak Taghvaee*

Force (IRGCASF) were also struck.

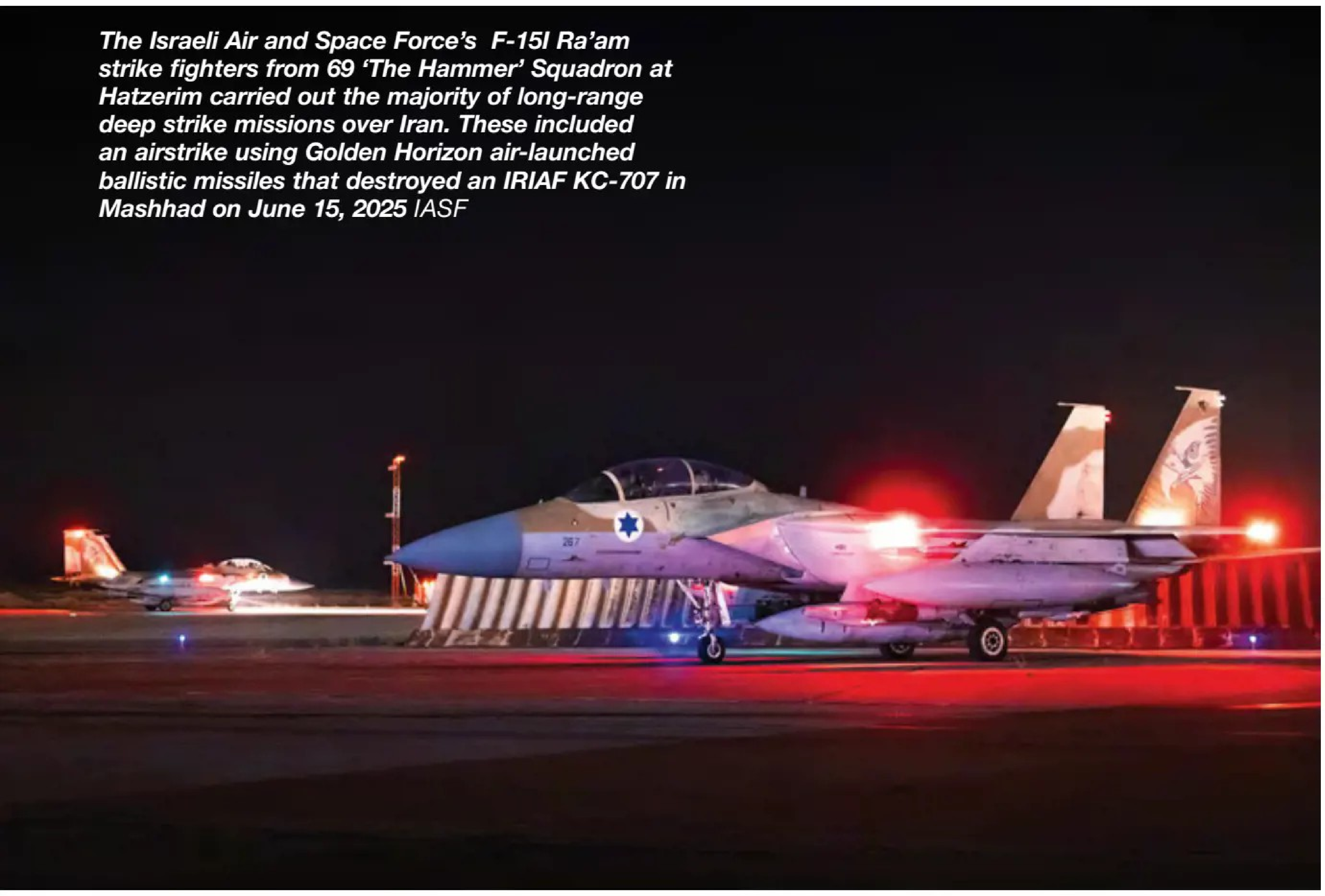
The SEAD campaign was followed by Offensive Counter-Air (OCA) operations aimed at establishing air superiority across Iranian airspace. The scale and intensity of the Israeli strikes prompted an immediate and nationwide dispersal of Iranian air assets. The IRIAF and the IRGCASF began evacuating their tanker, transport, special mission, and combat aircraft from vulnerable western and central bases. At 1st TFB Lashgari (Mehrabad Airport, Tehran) and 7th TFB Dowran (Shiraz), large-scale withdrawals were initiated. From Lashgari, two Boeing 707-3J9C aircraft were evacuated: 5-8301 (tanker) and 5-8316 (SIGINT/ELINT platform), both operated by the 11th Boeing 707 Squadron. Four Boeing 747s also departed: 5-8106 (747-270C), 5-8107 (747-131F), and two 747-2J9Fs (5-8113 and 5-8115). 5-8107 is the world's last operational KC-747. These belonged to the 11th Boeing 747 Squadron and were flown to Mashhad alongside the Boeing 707s.

The IRIAF's 11th Tactical Transport Squadron (TTS) relocated six C-130E Hercules and a single RC-130H 'Khofash' (5-8554) to Kerman. From Shiraz, the 72nd TTS evacuated six C-130E/H aircraft eastward, while the 71st TTS relocated its only three airworthy Ilyushin Il-76s –5-8205 (Il-76MD), 5-8209, and 5-8210 (Il-76TDs) – to bases in central and eastern Iran. The 72nd Tactical Fighter Squadron (TFS), operating 27 Su-24MK strike bombers, evacuated its ten operational aircraft to IRIAF bases in southern Iran. Grounded Su-24MKs were towed on trailers to concealed locations near Shiraz, protected under camouflage netting. The 71st Search and Rescue Squadron also evacuated six Bell 214C helicopters, while unserviceable examples were removed from base limits by road.

In Tehran, two airworthy CH-47C Chinooks of the 11th CH-47 Squadron were flown to safer locations, alongside at least three IRIAF Fokker F-27s, which were sent to Bojnord and Bandar Abbas. Meanwhile, the IRGCASF began evacuating its aircraft from Qadr Air Base, located in the northwest corner of Mehrabad International Airport. Six jets were flown out, including two Il-76TDs, two An-74T-200s, and two passenger aircraft – one of which was an ERJ-145LR. All were transferred to Mashhad by nightfall.

Combat air patrols over Iran: symbolism, strategy, and the Israeli response

In the morning of the first day of the war the IRIAF launched a series of limited combat air patrols (CAPs) from various tactical fighter bases across the country. Though militarily symbolic and tactically limited, these flights were intended to project strength, boost morale among regime supporters, and demonstrate the continued viability of the IRIAF following the opening wave of Israeli airstrikes. Despite their constrained scope,



The Israeli Air and Space Force's F-15I Ra'am strike fighters from 69 'The Hammer' Squadron at Hatzerim carried out the majority of long-range deep strike missions over Iran. These included an airstrike using Golden Horizon air-launched ballistic missiles that destroyed an IRIAF KC-707 in Mashhad on June 15, 2025 *IASF*

An IASF F-15A-17-MC Baz (669 'Lahak') from 133 Squadron, armed with a pair of Spice-1000 precision-guided bombs, prior to a deep strike mission over Iran in June 2025. IASF

KC-707 (275), one of six IASF Boeing 707 tankers, refuels a pair of F-35I Adir fighter jets on combat air patrol over the Mediterranean Sea during Operation Rising Lion IASF

IASF KC-707 (275) being flown from Ilan and Asaf Ramon International Airport during the war. The IRGC Aerospace Force did not attempt to target this or other tankers, as Russia barred Iran from obtaining satellite imagery of the aircraft via the Iran-owned, Russia-operated Khayyam reconnaissance satellite Babak Taghvaee

these patrols were interpreted by Israeli planners as potential threats to ongoing operations and therefore helped justify the expansion of Operation Rising Lion to include a broader Offensive Counter-Air (OCA) campaign targeting additional IRIAF airbases.

From 1st TFB Lashgari in Tehran, a MiG-29B was launched in the early morning, armed with four air-to-air missiles. It performed a short patrol flight over Tehran before returning to Mehrabad Airport after less than an hour. From 2nd TFB Fakkouri in Tabriz, a similar MiG-29B conducted a defensive CAP over the city and the surrounding northwest region. It was followed by an F-5E Tiger II, armed with AIM-9J Sidewinders and complete cannon rounds, which performed a similar patrol. From 3rd TFB Nojeh near Hamedan, an F-4E Phantom II armed with a pair of AIM-9Js and two AIM-7E Sparrow radar-guided missiles was launched. The aircraft, configured with three external fuel tanks, flew a longer route over Hamedan and then toward Tabriz before returning to base. Meanwhile, from 4th TFB Vahdati in Dezful, southwest Iran, an F-5E Tiger II conducted a short patrol over Dezful and Ahvaz, later followed by a twin-seat F-5F of the same squadron. From southern bases, including 6th TFB Yassini in Bushehr and 9th TFB Abdol Karimi in Bandar Abbas, one F-4E Phantom II each was launched for one-hour CAP missions along the Gulf coast.

Despite their symbolic nature, these CAPs were interpreted by the IASF as part of a potential Iranian air defence response. They were thus treated seriously within the framework of its OCA strategy. The IASF, already committed to neutralising Iran's ability to contest the air domain ahead of the US-led Operation Midnight Hammer against Iranian nuclear sites, expanded the scope of its airbase targeting campaign. Both the 2nd TFB Fakkouri and 3rd TFB Nojeh were heavily bombed, destroying over 30 fighter aircraft and the disabling of runways and taxiways. These strikes effectively grounded IRIAF aircraft across the west, northwest, and southwest of Iran. They forced a general evacuation of airworthy assets to more secure bases in the east and southeast.

In parallel, IRIAF assets based further east – beyond the effective range of Israeli strike aircraft – began operating their own deterrent patrols. At Mashhad, where a detachment of the 21st Tactical Fighter Squadron was stationed with six F-5E/F Tiger IIs on Quick Reaction Alert (QRA) duty, four aircraft were scrambled with full missile and cannon loadouts. These jets flew patrols along the Afghanistan border, with two of them flying at Birjand at the end of their mission. Meanwhile, in Konarak – home to the 10th TFB 'Delhamed Brothers' – the IRIAF launched unarmed, radar-less F-4D Phantom IIs and Mirage F1s over southeastern Iran. Though incapable of air-to-air interception, these flights served a psychological purpose: to deter cross-border infiltration by terrorist organisations such as ISIS-K, Pakistan-based Taliban cells, and Jaish ul-Adl (formerly Jundullah), which the regime suspects of receiving support from Israel.

On June 13, two 10th TFB-based fighter squadrons – 101st Combat Command Training Squadron (eight F-4D Phantom IIs) and 102nd TFS (12 Mirage F1BQ/EQs) – deployed one F-4D and two Mirage F1s to Zahedan International Airport. Satellite imagery from June 14 confirmed the presence of these aircraft at the Air Force ramp. The trio flew one-hour low-altitude missions along Iran's eastern borders throughout the conflict. These flights served no direct air defence function but were meant to demonstrate continued regime control over its border regions and deter opportunistic terrorist attacks during the war.

By contrast, in Iran's western and central regions, the IRIAF's ability to conduct CAPs was eliminated within hours of the initial Israeli strikes. Airbases in Hamedan, Tabriz, Tehran, and Dezful either saw their aircraft destroyed, runways cratered, or remaining airworthy fighters evacuated by air or road. As a result, meaningful combat air patrols were only sustained over Iran's eastern borders – where the IASF could not reach – and were largely psychological in nature.

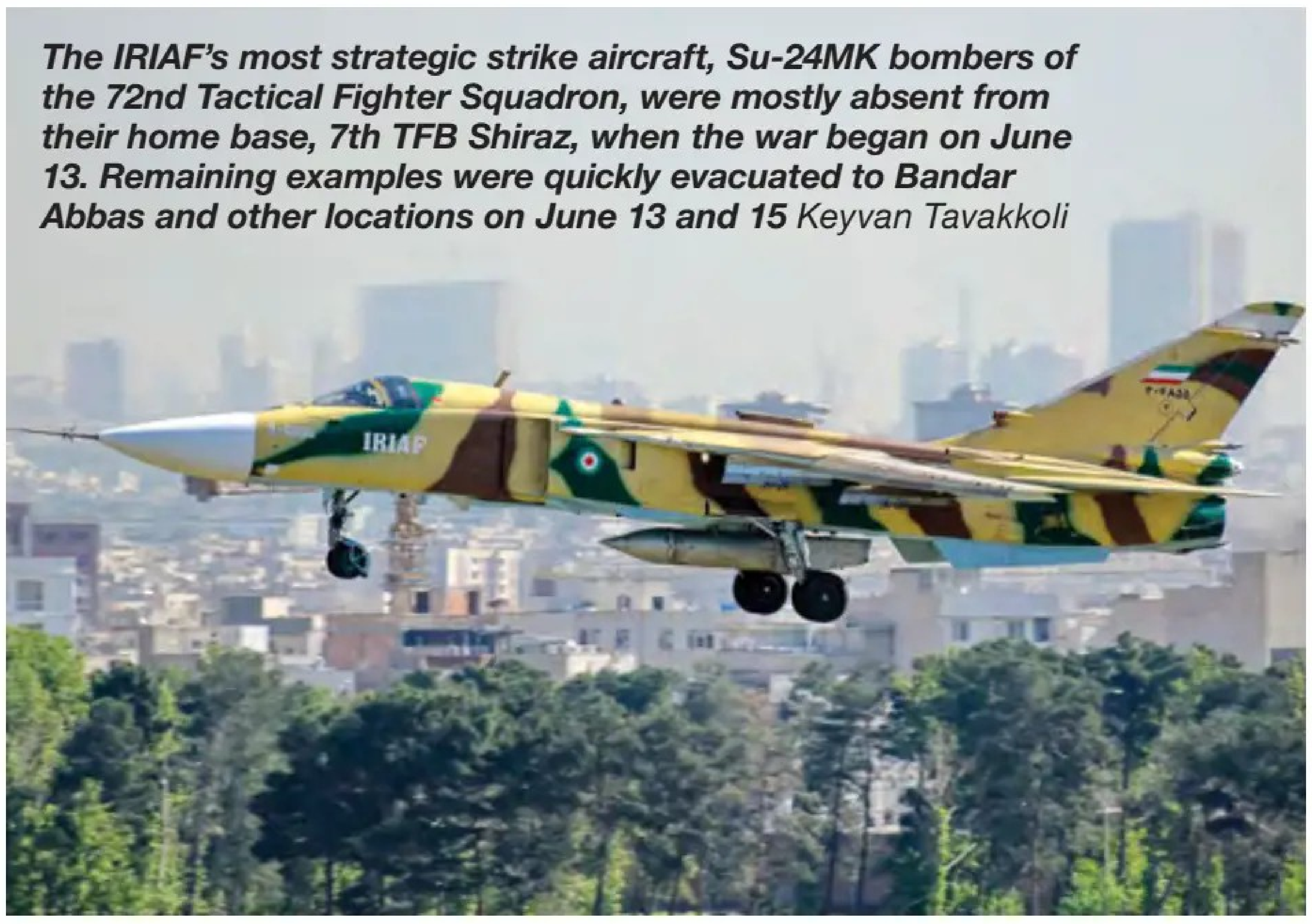
Sanctuary across borders: IRIAF evacuated to Pakistan

On June 15, 2025, just two days into the Iran–Israel war, the IRIAF suffered another critical loss. A pair of air-launched ballistic missiles fired by an IASF's fighter jet, most likely, an F-15D Ba'az, struck the northwest apron of Mashhad International Airport, targeting the core of Iran's aerial refuelling capability. The missile strike destroyed the last operational KC-707 tanker, a Boeing 707-3J9C 5-8301, while parked alongside its sister aircraft 5-8316, a SIGINT-configured 707, and a Boeing 747-270C (5-8106) widebody passenger aircraft (ex-Iraqi Airways). The destruction of 5-8301 – an irreplaceable enabler for the few remaining airworthy IRIAF F-14A Tomcats – prompted an urgent reassessment of the IRIAF's dispersal strategy.

Until that moment, Mashhad had been considered a safe fallback location for the IRIAF's tanker and transport fleet, with multiple assets having been relocated there from Lashgari (Tehran) and Dowran (Shiraz) airbases on June 13. In the wake of the Mashhad attack, surviving aircraft were quickly moved again: Boeing 747s were dispatched to Zahedan, Konarak, and Bandar Abbas, while the lone surviving 707-3J9C (5-8316) was sent to the now-deactivated 12th TFB in Birjand. But even these locations, far from the reach of initial Israeli strikes, were deemed inadequate. The airbase infrastructure lacked sufficient air defence protection, and the IRIAF feared follow-on strikes.

Recalling a precedent set during the early days of the Iran–Iraq War in September

Lineup of IASF C-130J-30s of 103 Squadron at Nevatim AB. If they had remained concentrated at their home base, they would likely have suffered losses during IRGCASF missile barrages *USAF/SMSgt Matthew Plew*



The IRIAF's most strategic strike aircraft, Su-24MK bombers of the 72nd Tactical Fighter Squadron, were mostly absent from their home base, 7th TFB Shiraz, when the war began on June 13. Remaining examples were quickly evacuated to Bandar Abbas and other locations on June 13 and 15 *Keyvan Tavakkoli*

1980 – when Iran had temporarily relocated aircraft to friendly nations – the IRIAF sought shelter abroad. Pakistan, in a reciprocal gesture rooted in historical co-operation, agreed to host Iranian military aircraft. As Iran had protected Pakistani passenger and military aircraft during India-Pakistan wars in the 1960s and 1970s, Pakistan now returned the favour. Beginning June 17, 2025, a large-scale relocation began: 12 C-130E/H Hercules tactical transports and one RC-130H were dispersed to Pakistani airbases, including Quetta and Lahore. The Boeing 747-131F (5-8107) – the world's last airworthy KC-747 tanker – and the surviving SIGINT-configured 707 (5-8316) were flown to Karachi International Airport, where they were discreetly parked adjacent to Pakistan International Airlines' maintenance complex.

To preserve deniability and reduce visibility, Iranian roundels were removed or covered. The C-130s retained their serials but had their Iranian flags coated in brown masking paint, and their crews wore civilian clothing during flights. The operation was completed within 48 hours. For the remainder of the war, these aircraft remained securely housed under the watch of Pakistan's Air Force, preventing further attrition of Iran's strategic airlift capability.

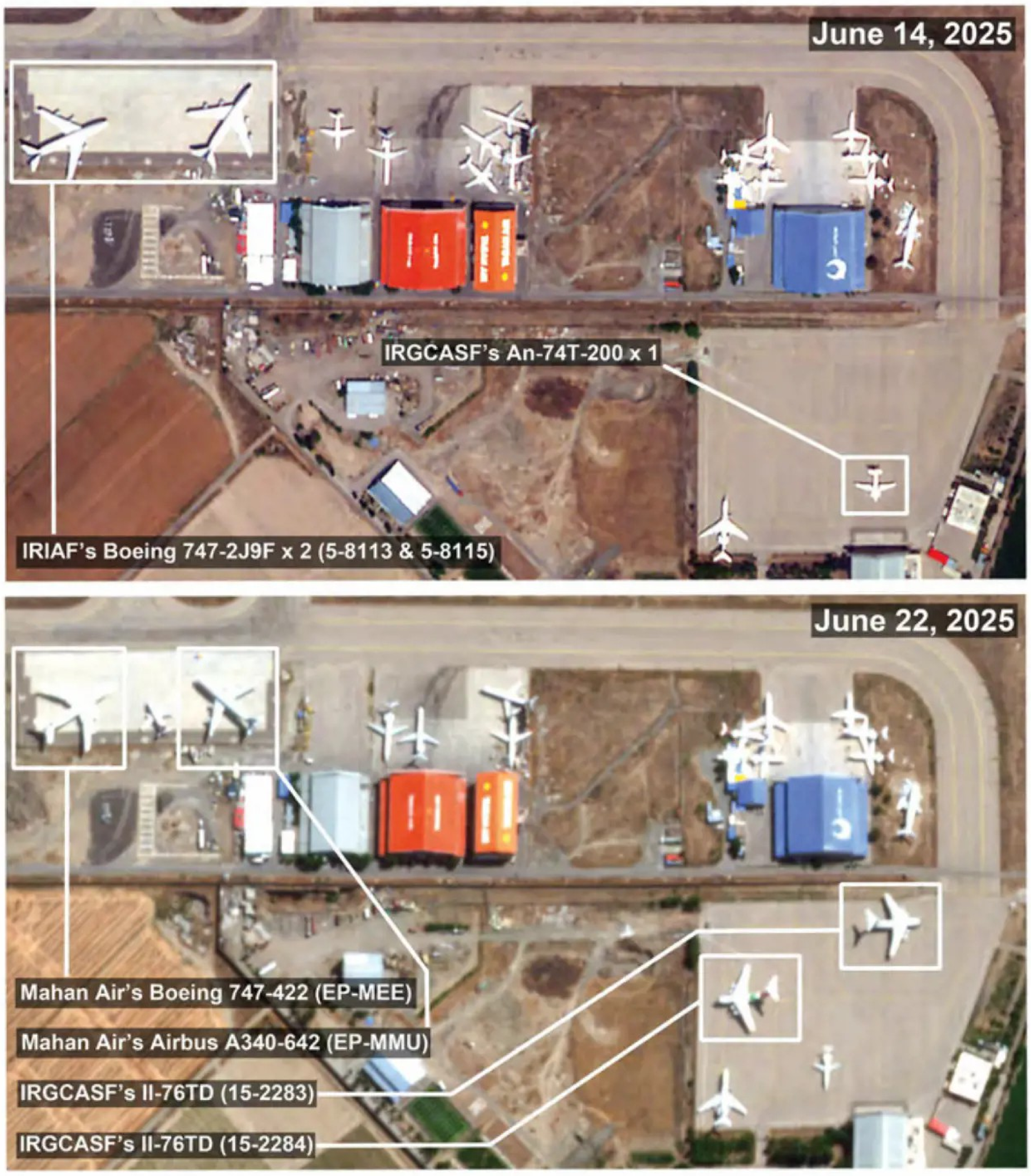
The impact of the loss of 5-8301 was operationally severe. It left the IRIAF with no in-service tankers capable of supporting its seven remaining flyable F-14A Tomcats, based at 8th TFB Babaiee in Isfahan. These iconic interceptors – kept in pristine condition for national air defence – were not flown during the war to avoid loss due to their unmatched but irreplaceable value. In the absence of refuelling capability, their QRA utility was drastically curtailed.

In response, the IRIAF submitted an emergency request to the Iranian Aircraft Industries (IACI) depot at Mehrabad for accelerated completion of depot-level maintenance on another KC-707 (5-8304), which had been grounded for several years. The overhaul is expected to be completed in October 2025, with operational status anticipated by December, restoring at least a limited aerial refuelling capability to the embattled air force.

As a gesture of gratitude and strategic alignment, Iranian President Masoud Pazeshkian visited Pakistan on August 2. Arriving at Nur Khan Air Base aboard the IRIAF's Airbus A340-313 (5-8405/ EP-IGA) – which itself had been evacuated to Muscat, Oman, during the war – the president met with his Pakistani counterpart and other senior officials. Discussions centred on military co-operation, economic relations, and regional stability in the aftermath of the war. With Israel's air campaign halted by US political intervention on June 25, Iran's alliance with Pakistan emerged strengthened, forged in the heat of a conflict that reshaped regional security dynamics.

Evacuating passenger aircraft: a race against precision airstrikes

Iran's decision to evacuate dozens of airworthy civilian and military-operated passenger aircraft was not merely precautionary – it was driven by a well-established precedent of Israeli willingness to strike aviation infrastructure and destroy airliners during conflicts. The IASF, known for its unrelenting air campaigns, had historically shown no hesitation in targeting passenger aircraft on the ground. During the first Lebanon War,



June 14, 2025
IRGCASF's An-74T-200 x 1
IRIAF's Boeing 747-2J9F x 2 (5-8113 & 5-8115)
June 22, 2025
Mahan Air's Boeing 747-422 (EP-MEE)
Mahan Air's Airbus A340-642 (EP-MMU)
IRGCASF's Il-76TD (15-2283)
IRGCASF's Il-76TD (15-2284)

Satellite imagery of Mashhad Airport's eastern section, on June 14 and 22, shows two IRIAF 747-2J9Fs (later evacuated to Karachi), IRGCASF Il-76TDs, and an An-74T-200 *Satellogic/Skyfi, analysis by Babak Taghvaee*

List of Iranian aircraft

Operator	Aircraft Type	Reg/Serial	MSN	Location on June 13, 2025	Places and Date of Evacuation
Air1Air	Boeing 737-42R	EP-AOA	29107	Tehran-Mehrabad	Not evacuated
Ava Airlines	Airbus A310-324	EP-RBD	576	Mashhad	Not evacuated
	Boeing 737-5Y0	EP-RBA	25185	Ahvaz	Mashhad, Iran on June 13, 2025
	Boeing 737-524	EP-RBC	28922	Mashhad	Not evacuated
Ata Airlines	Airbus A320-231	EP-TAC	00405	Tehran-Khomeini	Mashhad, Iran on June 16, 2025
	Boeing 737-332	EP-TAF	25995	Tabriz	Not evacuated
	Embraer ERJ-145LR	EP-EMB	145282	Tehran-Mehrabad	Not evacuated
	McDonnell Douglas MD-82	EP-TAJ	49902	Tabriz	Not evacuated
	McDonnell Douglas MD-83	EP-TAL	53625	Tehran-Mehrabad	Not evacuated
	McDonnell Douglas MD-83	EP-TAM	53465	Abadan	Not evacuated
	McDonnell Douglas MD-83	EP-TAN	53520	Tabriz	Not evacuated
	McDonnell Douglas MD-83	EP-TAO	53597	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
	McDonnell Douglas MD-83	EP-TAQ	53488	Masshhad	Not evacuated
	McDonnell Douglas MD-83	EP-TAR	53198	Masshhad	Not evacuated
	McDonnell Douglas MD-87	EP-TAZ	53010	Tabriz	Not evacuated
Atlas Air	McDonnell Douglas MD-83	EP-SAP	49936	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
AsaJet Airline	Embraer ERJ-145LR	EP-JEK	145509	Ilam	Not evacuated
	Embraer ERJ-145LR	EP-RHN	14500921	Tehran-Mehrabad	Not evacuated
Caspian Airlines	Boeing 737-330	EP-DOA	25216	Tehran-Khomeini	Not evacuated
	Boeing 737-4H6	EP-CAQ	26467	Tehran-Mehrabad	Not evacuated
	Boeing 737-524	EP-KPB	28924	Tehran-Mehrabad	Not evacuated
	Boeing 737-524	EP-KPC	26319	Tehran-Khomeini	Not evacuated
	McDonnell Douglas MD-83	EP-CPU	53223	Shiraz	Not evacuated
	McDonnell Douglas MD-83	EP-CAS	53623	Assaluyeh	Not evacuated
	McDonnell Douglas MD-83	EP-CPV	49938	Tehran-Mehrabad	Not evacuated
Chabahar Airlines	McDonnell Douglas MD-82	EP-CBD	49510	Tehran-Mehrabad	Not evacuated
Fly Kish Airlines	Boeing 737-3H4(WL)	EP-LEE	27955	Tehran-Mehrabad	Not evacuated
Iran Air	Airbus A300B4-605R	EP-IBA	723	Tehran-Mehrabad	Yazd, Iran on June 14, 2025
	Airbus A300B4-605R	EP-IBC	632	Rasht	Not evacuated
	Airbus A300B4-605R	EP-IBD	696	Sari	Not evacuated
	Airbus A300B4-203	EP-IBG	299	Isfahan	Not evacuated
	Airbus A310-304	EP-IBK	671	Yazd	Not evacuated
	Airbus A319-111	EP-IEP	01654	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
	Airbus A319-111	EP-IEQ	01679	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
	Airbus A330-243	EP-IJA	1540	Yazd	Not evacuated
	Airbus A330-243	EP-IJB	1586	Tehran-Khomeini	Yazd, Iran on June 14, 2025
	Airbus A330-243	EP-IJC	1286	Tehran-Khomeini	Zahedan, Iran on June 14, 2025
	Airbus A330-243	EP-IJD	1322	Tehran-Khomeini	Kerman, Iran on June 14, 2025
	ATR 72-600	EP-ITI	1489	Bandar Abbas	Not evacuated
	ATR 72-600	EP-ITM	1510	Rasht	Not evacuated
	Boeing 747-21AC	EP-ICD	24134	Tehran-Khomeini	Not evacuated
Iran Air Tours	Airbus A300B4-603	EP-MDJ	380	Tehran-Khomeini	Not evacuated
	Airbus A300B4-605R	EP-MDN	701	Izmir	Not evacuated
	Airbus A300B4-605R	EP-MDU	608	Tehran-Khomeini	Not evacuated
	Airbus A310-324	EP-MDH	574	Tehran-Khomeini	Not evacuated
	Airbus A310-325	EP-MDL	644	Tehran-Khomeini	Mashhad, Iran on June 16, 2025
	Airbus A310-325	EP-MDK	636	Shiraz	Not evacuated
	McDonnell Douglas MD-82	EP-MDC	49524	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
	McDonnell Douglas MD-82	EP-MDD	49852	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
	McDonnell Douglas MD-82	EP-MDE	49523	Tehran-Khomeini	Not evacuated
	McDonnell Douglas MD-82	EP-MDG	53232	Mashhad	Not evacuated
	McDonnell Douglas MD-83	EP-MDF	53184	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
	McDonnell Douglas MD-87	EP-MDV	49829	Mashhad	Not evacuated
Iran Aseman Airlines	Boeing 737-4H6	EP-APO	26443	Tehran-Khomeini	Not evacuated
	Fokker 100	EP-ASR	11522	Tehran-Mehrabad	Mashhad, Iran on June 14, 2025
	Fokker 100	EP-ATE	11323	Tehran-Mehrabad	Ramsar, Iran on June 14, 2025
Karun Airlines	Boeing 737-31S	EP-JIA	29267	Ahvaz	Not evacuated
	Boeing 737-330	EP-NFC	25414	Tehran-Mehrabad	Birjand, Iran on June 14, 2025
	Fokker 100	EP-AWZ	11497	Tehran-Mehrabad	Kerman, Iran on June 14, 2025
	Fokker 100	EP-MIS	11503	Ahvaz	Not evacuated
	Fokker 100	EP-OPI	11509	Ahvaz	Not evacuated
Kish Air	Airbus A321-211	EP-LCT	02965	Tehran-Mehrabad	Not evacuated
	Fokker 100	EP-LCQ	11492	Mashhad	Not evacuated
	McDonnell Douglas MD-82	EP-LCJ	53221	Kish Island	Not evacuated
	McDonnell Douglas MD-82	EP-LCK	53224	Tehran-Mehrabad	Kerman, Iran on June 14, 2025
	McDonnell Douglas MD-82	EP-LCL	53229	Tehran-Mehrabad	Kerman, Iran on June 14, 2025
	McDonnell Douglas MD-82	EP-LCM	53226	Kish Island	Not evacuated
	McDonnell Douglas MD-83	EP-LCO	53150	Tehran-Mehrabad	Mashhad, Iran on June 14, 2025
Pars Air	Boeing 737-31S	EP-PAM	29116	Tehran-Mehrabad	Yazd, Iran on June 14, 2025
	Boeing 737-448	EP-PAO	25736	Shiraz	Not evacuated
	Mitsubishi CRJ-200ER	EP-PRA	7785	Shiraz	Not evacuated
IRGCASF	Mitsubishi CRJ-200ER	EP-PUA	Unknown	Tehran-Mehrabad	Mashhad, Iran on June 14, 2025
	Embraer ERJ-145LR	EP-PUG	145440	Tehran-Mehrabad	Not evacuated
	Embraer ERJ-145LR	EP-PUN	14500932	Tehran-Mehrabad	Not evacuated
	Embraer ERJ-145LR	EP-PUO	Unknown	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
	Embraer ERJ-145LR	EP-PUQ	145447	Tehran-Mehrabad	Not evacuated

Operator	Aircraft Type	Reg/Serial	MSN	Location on June 13, 2025	Places and Date of Evacuation
	Il-76TD	15-2282	0063471155	Tehran-Mehrabad	Not evacuated due to maintenance issues (Engine maintenance)
	Il-76TD	15-2283	0063469071	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
	Il-76TD	15-2284/EP-PUL	0033448393	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
	Il-76TD	15-2287/EP-PUS	1023409321	Tehran-Mehrabad	Not evacuated
	An-74T-200	15-2253	365470991038	Tehran-Mehrabad	Mashhad, Iran on June 13 and Yazd, Iran on June 16, 2025
	An-74T-200	15-2257	3654701211050	Tehran-Mehrabad	Yazd, Iran on June 16, 2025
Mahan Air	Airbus A300B4-622R	EP-MMO	838	Tehran-Khomeini	Not evacuated
	Airbus A340-212	EP-MJA	0075	Tehran-Khomeini	Kerman, Iran on June 14, 2025
	Airbus A340-311	EP-MJC	0115	Tehran-Khomeini	Not evacuated
	Airbus A340-313	EP-MJF	0331	Tehran-Khomeini	Not evacuated
	Airbus A340-313	EP-MJG	0474	Tehran-Khomeini	Not evacuated
	Airbus A340-313	EP-MMT	0292	Tehran-Khomeini	Not evacuated
	Airbus A340-642	EP-MMG	0383	Tehran-Khomeini	Zahedan, Iran on June 14, 2025
	Airbus A340-642	EP-MMQ	0449	Tehran-Khomeini	Zahedan, Iran on June 14, 2025
	Airbus A340-642	EP-MMU	0933	Tehran-Khomeini	Mashhad, Iran on June 16, 2025
	BAe 146-200	EP-MMV	E2079	Tehran-Mehrabad	Kerman, Iran on June 14, 2025
	Boeing 747-422	EP-MEE	24383	Tehran-Mehrabad	Mashhad, Iran on June 16, 2025
	Cessna Citation CJ2	EP-MNZ	525A0026	Tehran-Mehrabad	Not evacuated
	Fokker 50	EP-MEH	20263	Kerman	Not evacuated
	Avro RJ100	EP-MOI	E3362	Tehran-Mehrabad	Kerman, Iran on June 14, 2025
	Avro RJ85	EP-MEI	E2394	Kerman	Not evacuated
	Avro RJ85	EP-MEU	E2318	Tehran-Mehrabad	Bojnurd, Iran on June 14, 2025
	Avro RJ85	EP-MOS	E2347	Tehran-Mehrabad	Bojnurd, Iran on June 14, 2025
Nasim Air	Boeing 737-4H6	EP-NSR	26459	Abadan	Not evacuated
Qeshm Air	Airbus A300B4-605R	EP-FQK	584	Tehran-Khomeini	Mashhad, Iran on June 16, 2025
	Airbus A300B4-605R	EP-FQM	603	Tehran-Khomeini	Gorgan, Iran on June 16, 2025
	Airbus A320-214	EP-FQH	611	Ankara	No evacuation needed
	Airbus A320-214	EP-FQR	607	Tehran-Khomeini	Rasht, Iran on June 16, 2025
	Fokker 100	EP-FQF	11444	Tehran-Mehrabad	Noshahr on June 14, 2025
	Fokker 100	EP-FQI	11475	Tehran-Mehrabad	Birjand on June 14, 2025
	Avro RJ100	EP-FQU	E3374	Tehran-Mehrabad	Ramsar on June 14, 2025
	Avro RJ100	EP-FQV	E3375	Tehran-Mehrabad	Ramsar on June 14, 2025
Raimon Airways	Embraer ERJ-145EP	EP-NEA	145026	Tehran-Mehrabad	Rasht on June 14, 2025
	Embraer ERJ-145EP	EP-NEB	145025	Tehran-Mehrabad	Rasht on June 14, 2025
Iranian Air Force	Airbus A321-231	5-8401 / EP-IGD	1202	Tehran-Mehrabad	Muscat, Oman on June 18, 2025
	Airbus A340-313	5-8405 / EP-IGA	257	Tehran-Mehrabad	Muscat,Oman on June 18, 2025
	Airbus A300B4-622R	EP-SIF (5-8402)	762	Tehran-Khomeini	Not evacuated
	Airbus A300B4-622R	EP-SIG (5-8403)	750	Tehran-Mehrabad	Muscat, Oman on June 18, 2025
	Airbus A320-212	EP-AJJ	00525	Tehran-Khomeini	Muscat, Oman on June 20, 2025
	Airbus A321-231	EP-SSM	01977	Tehran-Mehrabad	Muscat, Oman on June 18, 2025
	Airbus A321-231	EP-SSN	02055	Izmir	No evacuation needed
	Dassault Falcon 900EX	5-9017 / EP-IGC	134	Tehran-Mehrabad	Muscat, Oman on June 18, 2025
	Avro RJ85	5-8409 / EP-IGE	E2323	Tehran-Mehrabad	Muscat, Oman on June 18, 2025
	Avro RJ85	5-8410 / EP-IGF	E2325	Tehran-Mehrabad	Not evacuated
	Boeing 707-3J9C	5-8301	20830/876	Tehran-Mehrabad	Mashhad, Iran on June 13, 2025
	Boeing 707-3J9C	5-8316	20834/894	Tehran-Mehrabad	Birjand, Iran on June 13 and Karachi, Pakistan on June 17, 2025
	Boeing 737-31S	5-8406 / EP-SII	29056	Tehran-Mehrabad	Muscat, Oman on June 20, 2025
	Boeing 737-3Q8	5-8607 / EP-SIJ	27633	Tehran-Mehrabad	Muscat, Oman on June 20, 2025
	Boeing 737-33V	5-8608 / EP-SIR	29341	Tehran-Mehrabad	Evacuation failed due to incomplete maintenance work
	Boeing 747-270C	5-8106	21180/287	Tehran-Mehrabad	Mashhad, Iran on June 13 and Karachi, Pakistan on June 17, 2025
	Boeing 747-131F	5-8107	20082/151	Tehran-Mehrabad	Mashhad, Iran on June 13 and Karachi, Pakistan on June 17, 2025
	Boeing 747-2J9F	5-8113 / EP-SIH	21486/315	Tehran-Mehrabad	Mashhad, Iran on June 13 and Karachi, Pakistan on June 17, 2025
	Boeing 747-2J9F	5-8115 / EP-SIP	21507/340	Tehran-Mehrabad	Mashhad, Iran on June 13 and Karachi, Pakistan on June 17, 2025
	Lockheed C-130E	5-8501	4115	Tehran-Mehrabad	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed C-130E	5-8503	4276	Tehran-Mehrabad	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed C-130E	5-8508	4296	Tehran-Mehrabad	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed C-130E	5-8511	4365	Shiraz	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed C-130E	5-8518	4398	Shiraz	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed C-130E	5-8524	4439	Shiraz	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed C-130E	5-8526	4442	Shiraz	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed C-130E	5-8527	4444	Tehran-Mehrabad	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025

Operator	Aircraft Type	Reg/Serial	MSN	Location on June 13, 2025	Places and Date of Evacuation
	Lockheed C-130H	5-8529	4448	Shiraz	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed C-130H	5-8544	4484	Shiraz	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed C-130H	5-8546	4486	Shiraz	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed C-130H	5-8547	4487	Shiraz	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Lockheed RC-130H	5-8554	4456	Tehran-Mehrabad	Evacuated to East of Iran on June 13 and Pakistan on June 17, 2025
	Il-76MD	5-8205	0063470102	Shiraz	Evacuated to East of Iran on June 13, 2025
	Il-76TD	5-8209	1003403087	Shiraz	Evacuated to East of Iran on June 13, 2025
	Il-76TD	5-8210	0063469055	Shiraz	Evacuated to East of Iran on June 13, 2025
Sepehran Airlines	Boeing 737-3Y5	EP-FSE	25613	Mashhad	Not evacuated
	Boeing 737-33V	EP-FSI	29340	Tehran-Khomeini	Mashhad, Iran on June 16, 2025
	Boeing 737-3K2	EP-FST	24326	Mashhad	Not evacuated
	Boeing 737-36M	EP-FSU	28332	Mashhad	Not evacuated
	Boeing 737-36N	EP-FSV	28670	Tehran-Khomeini	Mashhad, Iran on June 16, 2025
	Boeing 737-5L9	EP-FSA	25066	Mashhad	Not evacuated
	Boeing 737-529	EP-FSF	26537	Mashhad	Not evacuated
	Boeing 737-53C	EP-FSK	24826	Mashhad	Not evacuated
	Boeing 737-55S	EP-FSQ	3096	Tehran-Khomeini	Mashhad, Iran on June 16, 2025
Taban Air	Boeing 737-4Q8	EP-TBJ	28202	Mashhad	Not evacuated
	McDonnell Douglas MD-88	EP-SMA	53550	Mashhad	Not evacuated
	McDonnell Douglas MD-88	EP-SMB	53548	Mashhad	Not evacuated
	McDonnell Douglas MD-88	EP-TBB	53549	Mashhad	Not evacuated
Toos Airlines	Embraer ERJ-145MP	EP-TOG	145285	Tehran-Mehrabad	Not evacuated
	Hawker Beechcraft 400XP	EP-TOB	RK-592	Tehran-Mehrabad	Not evacuated
	Hawker Beechcraft 400XP	EP-TOC	RK-594	Tehran-Mehrabad	Not evacuated
	Hawker Beechcraft 400XP	EP-TOF	RK-587	Tehran-Mehrabad	Not evacuated
Varesh Airlines	Boeing 737-3S3	EP-VAA	29245	Tehran-Mehrabad	Not evacuated
	Boeing 737-301	EP-VAK	23937	Tehran-Mehrabad	Sari, Iran on June 14, 2025
	Boeing 737-33A	EP-VAV	27454	Tehran-Khomeini	Mashhad, Iran on June 14, 2025
	Boeing 737-5Q8	EP-VAF	28201	Tehran-Mehrabad	Sari, Iran on June 14, 2025
	Boeing 737-524	EP-VAR	28927	Sari	Not evacuated
	Boeing 737-524	EP-VBM	28921	Tehran-Mehrabad	Mashhad, Iran on June 14, 2025
Yazd Airways	Airbus A310-304	EP-DZA	526	Tehran-Khomeini	Mashhad, Iran on June 14, 2025
	Avro RJ85	EP-DZH	E2383	Tehran-Mehrabad	Yazd, Iran on June 14, 2025
Zagros Airlines	Airbus A319-113	EP-ZAX	00644	Tehran-Khomeini	Not evacuated
	McDonnell Douglas MD-82	EP-ZAE	53066	Tehran-Mehrabad	Not evacuated
	McDonnell Douglas MD-82	EP-ZAG	49372	Shiraz	Not evacuated
	McDonnell Douglas MD-82	EP-ZAM	49483	Tehran-Khomeini	Not evacuated
	McDonnell-Douglas MD-83	EP-ZAQ	49769	Shiraz	Not evacuated

Israeli commandos destroyed several civilian aircraft belonging to Lebanon's national carrier, MEA (Middle East Airlines).

More recently, on May 6, the IASF destroyed three civilian airliners at Sana'a International Airport – one Airbus A330-202 (7O-AFE) and two A320-233s (7O-AFA and 7O-AFC) operated by Yemenia Airways. A third A320-233 (7O-AFF) was destroyed in a follow-up strike on May 28. With such precedents in mind, Iranian airlines scrambled to relocate vulnerable assets away from major urban centres and high-priority targets.

From June 13 onwards, dozens of Iranian airliners were urgently evacuated from Mehrabad and Khomeini International Airports in Tehran, as well as from other central and western airfields to safer locations in the north, northeast, east, and southeast of the country. While some aircraft were already positioned in places like Mashhad, Yazd, or Kerman and required no movement, others were rerouted mid-flight or relocated at night under tight operational security. In total, over 120 aircraft from more than 25 airlines and military-linked operators were relocated.

Iran Air, the national carrier, relocated several of its Airbus A300s and A330s to Yazd, Kerman, and Zahedan. Mahan Air, the country's largest airline, transferred numerous A340s, RJ-series aircraft, and a Boeing 747-422 to secondary airports. Aircraft carrying foreign nationals – including Indians and Chinese – were repurposed for evacuation missions from Tehran in late June. Iran Air Tours, Karun Airlines, and Kish Air conducted systematic dispersals of their MD-80 series and Fokker 100 fleets to cities like Mashhad, Kerman, Birjand, and Sari.

Among the most sensitive operations was the evacuation of airworthy aircraft operated by the IRIAF and IRGCASF under civilian brands. The IRIAF evacuated key assets of its two airline subsidiaries: Meraj Airlines, which operated Airbus A300s, A320s, and A321s, and Saha Airlines, which flew Boeing 737s and a 747-2J9F. Except for the Boeing 747-2J9F, which was sent to Pakistan, the other aircraft were flown to Oman, including Muscat International Airport, between June 18 and 20, signalling not only an intent to preserve strategic assets but also to create plausible deniability around state-controlled commercial activity. Several IRGCASF-owned jets operated by Pouya Air and Toos Airlines were also quietly relocated to eastern Iran.

The urgency of the Iranian response was underscored by an unexpected Israeli strike on Azadi Airport, a small general aviation facility west of Tehran used exclusively for ultralight aircraft and civilian recreational flying. Despite lacking military or strategic value, the IASF bombed the airport, destroying dozens of privately owned ultralight aircraft stored in hangars. This incident sent shockwaves across Iran's aviation community and reinforced the belief that any aircraft – military or civilian – was at risk if left exposed in central or western Iran.

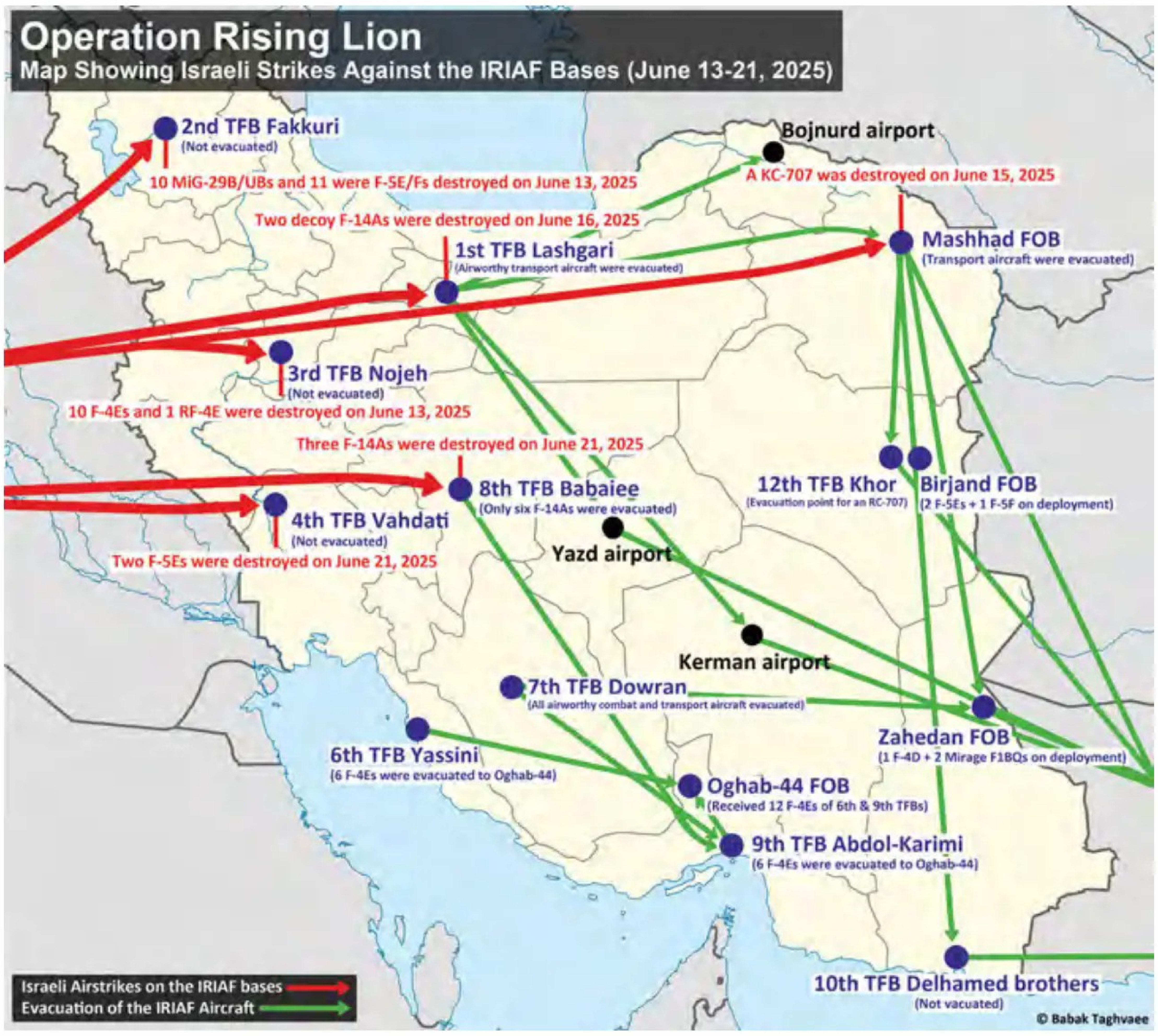
Had the war continued beyond June 25, many more Iranian aircraft – particularly those stranded at closed or bombed airports like Shiraz or Tehran – would have likely been destroyed. The IRGC had blocked runways at key airports to prevent their use in any hypothetical combat search and rescue (CSAR) operation by Israeli or US special forces. Meanwhile, the IASF began demonstrating increasingly indiscriminate targeting patterns, fuelled by the reality that US missile defence systems protecting Israeli airspace were running low on interceptors. With Israel having achieved its primary goals – crippling Iran's underground nuclear program and degrading its ballistic missile capabilities – pressure from the Trump administration ultimately led to a halt in Israeli airstrikes on June 25.

Following the ceasefire, airspace over eastern Iran was gradually reopened to

List of Israeli aircraft

Operator	Aircraft Type	Reg/Serial	MSN	Location on June 13, 2025	Places and Dates of Evacuation
Air Haifa	ATR 72-600 (72-212A)	4X-IHA	1701	Haifa	Larnaca, Cyprus on June 13, 2025
	ATR 72-600 (72-212A)	4X-IHB	1132	Haifa	Larnaca, Cyprus on June 13, 2025
	ATR 72-600 (72-212A)	4X-IHC	1627	Haifa	Larnaca, Cyprus on June 13, 2025
Arkia - Israeli Airlines	Airbus A320-214	4X-AGO	03056	Varna (for maintenance)	No evacuation needed
	Airbus A320-214	LZ-EAJ	01797	Varna (for maintenance)	Varna, Bulgaria on June 12, 2025
	Airbus A321-251NX(LR)	4X-AGH	08517	Larnaca, Cyprus	No evacuation needed
	Airbus A321-251NX(LR)	4X-AGK	08567	En-route Tel Aviv from Barcelona	Diverted to Paphos, Cyprus on June 13, 2025
	Embraer ERJ-190AR	4X-EMA	19000172	Tel Aviv-Ben Gurion	Larnaca, Cyprus on June 14, 2025
	Embraer ERJ-190AR	4X-EMC	19000713	Paphos, Cyprus	No evacuation needed
	Embraer ERJ-190AR	4X-EMF	19000745	Paphos, Cyprus	No evacuation needed
Challenge Airlines IL	Boeing 747-4EVERF	4X-ICA	35172	En-route Tel Aviv from Hong Kong	Diverted to Baku, Azerbaijan Republic on June 13, 2025
	Boeing 747-412F	4X-ICK	26563	Liege, Belgium	No evacuation needed
	Boeing 767-3Q8(ER)(BDSF)	4X-IAJ	28207	Liege, Belgium	No evacuation needed
Israeli Air Force	Boeing 707-3J6B (KC-707)	260	20716/880	Nevatim Air Base	Ilan and Asaf Ramon Intl Airport, Israel on June 13, 2025
	Boeing 707-3J6C (KC-707)	264	20721/875	Nevatim Air Base	Ilan and Asaf Ramon Intl Airport, Israel on June 13, 2025
	Boeing 707-3L6C (KC-707)	272	21096/900	Nevatim Air Base	Ilan and Asaf Ramon Intl Airport, Israel on June 13, 2025
	Boeing 707-3P1C (KC-707)	275	21334/923	Nevatim Air Base	Ilan and Asaf Ramon Intl Airport, Israel on June 13, 2025
	Boeing 707-3W6C (KC-707)	290	21956/941	Nevatim Air Base	Ilan and Asaf Ramon Intl Airport, Israel on June 13, 2025
	Boeing 707-366C (KC-707)	295	20919/888	Nevatim Air Base	Ilan and Asaf Ramon Intl Airport, Israel on June 13, 2025
	Lockheed C-130HI	102 / 4X-FBA	4430	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed KC-130HI	420 / 4X-FBQ	4653	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed KC-130HI	427 / 4X-FBS	4662	Nevatim Air Base	Evacuation was not possible due to maintenance work.
	Lockheed KC-130HI	428 / 4X-FBX	4692	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed KC-130HI	435 / 4X-FBT	4668	Nevatim Air Base	Evacuation was not possible due to maintenance work.
	Lockheed KC-130HI	436 / 4X-FBW	4686	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed KC-130HI	522 / 4X-FBY	4660	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed KC-130HI	545 / 4X-FBZ	4664	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed C-130J-30	661	5723	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed C-130J-30	662	5742	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed C-130J-30	663	5781	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed C-130J-30	665	5754	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed C-130J-30	667	5794	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed C-130J-30	668	5799	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
	Lockheed C-130J-30	669	5845	Nevatim Air Base	Relocated constantly between Hatzor, Ramon and Nevatim during the war
Israeli government	Boeing 767-338 (ER)	4X-ISR	30186/796	Nevatim Air Base	Athens, Greece on June 13, 2025
Israir Airlines	Airbus A320-232	4X-ABF	04354	Tel Aviv-Ben Gurion	Larnaca, Cyprus on June 13, 2025
	Airbus A320-232	4X-ABG	04413	Tel Aviv-Ben Gurion	Larnaca, Cyprus on June 13, 2025
	Airbus A320-232	4X-ABI	07110	En-route Tel Aviv from Vilnius	Diverted to Athens, Greece on June 13, 2025
	Airbus A320-232	4X-ABS	02728	Tel Aviv-Ben Gurion	Larnaca, Cyprus on June 13, 2025
	Airbus A320-232	4X-ABT	06200	Tel Aviv-Ben Gurion	Larnaca, Cyprus on June 13, 2025
	Airbus A320-232	4X-ABW	02587	Tel Aviv-Ben Gurion	Larnaca, Cyprus on June 13, 2025
	Airbus A320-232	4X-ABX	02934	Tel Aviv-Ben Gurion	Larnaca, Cyprus on June 13, 2025
	Airbus A320-232	4X-ABY	03010	Tel Aviv-Ben Gurion	Larnaca, Cyprus on June 13, 2025
El Al Israel Airlines	Boeing 737-858	4X-EKA	29957	Tel Aviv-Ben Gurion	Sofia, Bulgaria on June 19, 2025
	Boeing 737-858	4X-EKB	29958	Tel Aviv-Ben Gurion	Sofia, Bulgaria on June 19, 2025
	Boeing 737-858	4X-EKC	29959	Madrid, Spain	No evacuation needed
	Boeing 737-8HX	4X-EKF	29638	En-route Tel Aviv from Berlin	Diverted to Larnaca, Cyprus on June 13, 2025
	Boeing 737-85P	4X-EKH	35458	Tel Aviv-Ben Gurion	Bucharest, Romania on June 13, 2025

Operator	Aircraft Type	Reg/Serial	MSN	Location on June 13, 2025	Places and Dates of Evacuation
	Boeing 737-86N	4X-EKI	28587	En-route Tel Aviv from Barcelona	Diverted to Paphos, Cyprus on June 13, 2025
	Boeing 737-85P	4X-EKJ	35486	Tel Aviv-Ben Gurion	Budapest, Hungary on June 13, 2025
	Boeing 737-85R	4X-EKK	39070	Tel Aviv-Ben Gurion	Vienna, Austria on June 13, 2025
	Boeing 737-85P	4X-EKL	35487	En-route Tel Aviv from London	Diverted to Paphos, Cyprus on June 13, 2025
	Boeing 737-804	4X-EKM	30465	Tel Aviv-Ben Gurion	Budapest, Hungary on June 13, 2025
	Boeing 737-86Q	4X-EKO	30287	Tel Aviv-Ben Gurion	No evacuation was possible due to maintenance
	Boeing 737-8Q8	4X-EKP	30639	Tel Aviv-Ben Gurion	Prague, Czech Republic on June 13, 2025
	Boeing 737-804	4X-EKR	30466	En-route Tel Aviv from Krakow	Landed at Tel Aviv on June 13 but was evacuated to Sofia on June 16, 2025
	Boeing 737-8HX	4X-EKS	36433	Tel Aviv-Ben Gurion	Sofia, Bulgaria on June 13 2025
	Boeing 737-8BK	4X-EKT	33030	En-route Tel Aviv from Amsterdam	Diverted to Larnaca, Cyprus on June 13, 2025
	Boeing 737-8Z9	4X-EKU	33834	Tel Aviv-Ben Gurion	No evacuation was possible due to maintenance
	Boeing 737-86N(BCF)	4X-EKZ	33004	Tel Aviv-Ben Gurion	Sofia, Bulgaria on June 13 2025
	Boeing 737-85P	LY-LOC	33980	En-route Tel Aviv from Belgrade	Diverted to Larnaca, Cyprus on June 13, 2025
	Boeing 737-8Q8	LY-PMI	28241	Tel Aviv-Ben Gurion	Bucharest, Romania on June 13, 2025
	Boeing 737-8Q8	LY-SPU	30628	Tel Aviv-Ben Gurion	Bucharest, Romania on June 13, 2025
	Boeing 737-86J	LY-TFS	37741	Tel Aviv-Ben Gurion	Bucharest, Romania on June 13, 2025
	Boeing 737-958(ER)	4X-EHA	41552	Paris, France	No evacuation needed
	Boeing 737-958(ER)	4X-EHB	41553	En-route Tel Aviv from Madrid	Diverted to Athens, Greece on June 13, 2025
	Boeing 737-958(ER)	4X-EHC	41554	Tel Aviv-Ben Gurion	No evacuation was possible due to maintenance
	Boeing 737-958(ER)	4X-EHD	41555	En-route Tel Aviv from Budapest	Diverted to Larnaca, Cyprus on June 13, 2025
	Boeing 737-958(ER)	4X-EHE	41556	En-route Tel Aviv from Lisbon	Diverted to Rome, Italy on June 13, 2025
	Boeing 737-958(ER)	4X-EHF	41557	Tel Aviv-Ben Gurion	No evacuation was possible due to maintenance
	Boeing 737-958(ER)	4X-EFH	41558	En-route Tel Aviv from Tbilisi	Diverted to Paphos, Cyprus on June 13, 2025
	Boeing 737-958(ER)	4X-EFI	41559	Frankfurt, Germany	No evacuation needed
	Boeing 777-258(ER)	4X-ECB	30832	Phuket, Thailand	No evacuation needed
	Boeing 777-258(ER)	4X-ECC	30833	En-route Tel Aviv from New York	Diverted to Rome, Italy on June 13, 2025
	Boeing 777-258(ER)	4X-ECD	33169	Rome, Italy	No evacuation needed
	Boeing 777-258(ER)	4X-ECE	36083	Bangkok, Thailand	No evacuation needed
	Boeing 777-258(ER)	4X-ECF	36084	En-route Tel Aviv from Paris	Diverted to Athens, Greece on June 13, 2025
	Boeing 787-8 Dreamliner	4X-ERA	63396	Boston, United States	No evacuation needed
	Boeing 787-8 Dreamliner	4X-ERB	63397	Fort Lauderdale, United States	No evacuation needed
	Boeing 787-8 Dreamliner	4X-ERC	63399	New York, United States	No evacuation needed
	Boeing 787-8 Dreamliner	4X-ERD	63398	En-route Tel Aviv from New York	Diverted to Rome, Italy on June 13, 2025
	Boeing 787-9 Dreamliner	4X-EDA	63548	Tel Aviv-Ben Gurion	Bucharest, Romania on June 13, 2025
	Boeing 787-9 Dreamliner	4X-EDB	42117	New York, United States	No evacuation needed
	Boeing 787-9 Dreamliner	4X-EDC	38086	New York, United States	No evacuation needed
	Boeing 787-9 Dreamliner	4X-EDD	63392	En-route Tel Aviv from Miami	Diverted to Milan, Italy on June 13, 2025
	Boeing 787-9 Dreamliner	4X-EDE	63393	New York, United States	No evacuation needed
	Boeing 787-9 Dreamliner	4X-EDF	63394	Bangkok, Thailand	No evacuation needed
	Boeing 787-9 Dreamliner	4X-EDH	38085	Los Angeles, United States	No evacuation needed
	Boeing 787-9 Dreamliner	4X-EDI	38800	Los Angeles, United States	No evacuation needed
	Boeing 787-9 Dreamliner	4X-EDJ	65086	En-route Tel Aviv from New York	Diverted to Larnaca, Cyprus on June 13, 2025
	Boeing 787-9 Dreamliner	4X-EDK	63395	New York, United States	No evacuation needed
	Boeing 787-9 Dreamliner	4X-EDL	65094	En-route Tel Aviv from Milan	Diverted to Milan, Italy on June 13, 2025
	Boeing 787-9 Dreamliner	4X-EDM	38783	En-route Tel Aviv from New York	Returned to New York, United States on June 12, 2025
	Boeing 787-9 Dreamliner	4X-EDN	34319	Amsterdam, Netherlands	No evacuation needed


Operation Rising Lion
Map Showing Israeli Strikes Against the IRIAF Bases (June 13-21, 2025)
2nd TFB Fakkuri
(Not evacuated)
10 MiG-29B/UBs and 11 were F-5E/Fs destroyed on June 13, 2025
Bojnurd airport
A KC-707 was destroyed on June 15, 2025
Two decoy F-14As were destroyed on June 16, 2025
1st TFB Lashgari
(Airworthy transport aircraft were evacuated)
Mashhad FOB
(Transport aircraft were evacuated)
3rd TFB Nojeh
(Not evacuated)
10 F-4Es and 1 RF-4E were destroyed on June 13, 2025
Three F-14As were destroyed on June 21, 2025
12th TFB Khor
(Evacuation point for an RC-707)
Birjand FOB
(2 F-5Es + 1 F-5F on deployment)
8th TFB Babaiee
(Only six F-14As were evacuated)
4th TFB Vahdati
(Not evacuated)
Two F-5Es were destroyed on June 21, 2025
Yazd airport
Kerman airport
7th TFB Dowran
(All airworthy combat and transport aircraft evacuated)
Zahedan FOB
(1 F-4D + 2 Mirage F1BQs on deployment)
6th TFB Yassini
(6 F-4Es were evacuated to Oghab-44)
Oghab-44 FOB
(Received 12 F-4Es of 6th & 9th TFBs)
9th TFB Abdol-Karimi
(6 F-4Es were evacuated to Oghab-44)
10th TFB Delhamed brothers
(Not vacuated)
Israeli Airstrikes on the IRIAF bases
Evacuation of the IRIAF Aircraft
© Babak Taghvaee

domestic and international traffic. Aircraft previously evacuated to places like Mashhad, Bojnord, and Kerman re-entered commercial service. The IRIAF retrieved its Meraj and Saha fleet from Oman, and by August 2025, most relocated aircraft were back in operation. However, the psychological and strategic lesson remained clear: Iran's civil aviation assets – military-owned or not – were legitimate targets in the eyes of the IASF.

Israel's shielding

While Iran dispersed its aircraft across a fragmented landscape of regional airfields, Israel faced a different but equally urgent challenge: protecting a highly centralised aviation infrastructure from a wave of Iranian missile strikes. Beginning on June 13, in response to Operation Rising Lion, the IRGCASF launched True Promise 3 – a massive retaliatory barrage involving one-way attack drones and ballistic missiles fired from at least 12 IRGC bases across Iran. Although the IASF successfully neutralised launch facilities in the northwest and west – particularly near Kermanshah and Tabriz – missile bases in central Iran, equipped with advanced systems and hypersonic warheads, continued to operate throughout the war. Israel's Arrow 2 and Arrow 3 missile defence systems, bolstered by two US Army THAAD batteries deployed in 2024–2025, successfully intercepted numerous threats. However, the sheer volume of incoming missiles severely strained their interceptor inventories.

Faced with the growing threat of infrastructure-targeting strikes and the need to preserve strategic support aircraft, the IASF pre-emptively evacuated its aerial refuelling and transport fleet. The air force's six KC-707 tanker aircraft, one C-130HI, five of the seven KC-130HI multi-role tanker transports, and seven C-130J-30 tactical transports were withdrawn from Nevatim AB. Most were relocated to Ovda, Hatzor, as well as Ilan and Asaf Ramon International Airport in southern Israel, near the Jordanian border. In contrast, others were kept airborne over Iraq, Jordan, or Syria. At any given time, at least three KC-707s remained in the air to support outbound and inbound IASF strike packages. This air bridge was supported by nearly 30 US Air Force, Air National Guard, and Air Force Reserve KC-135Rs and KC-46As, operating from Prince Sultan AB (Saudi Arabia) and Souda AB (Greece).

Special mission aircraft – including the Nachshon Eitan, Shavit, and Oron, all Gulfstream-based ISR platforms – rotated between Ramon and Hatzor Air Bases, flying high-value missions over Syria, Iraq, and near Iranian airspace. These aircraft were critical for providing command, control, and situational awareness to IASF fighter formations during strikes on Iranian missile and nuclear sites.

Israel's civil aviation sector also enacted swift and coordinated defensive measures. The national carrier El Al, along with IsrAir, Arkia, Air Haifa, and Challenge Airlines IL, implemented widespread evacuations and diversions. Aircraft en route to Tel Aviv on June 13 were diverted midair to destinations across Europe, including Larnaca, Paphos, Sofia, Vienna, Rome, Bucharest, and Baku. Others already on the ground at Ben Gurion International Airport were flown out within hours. El Al alone relocated a significant portion of its Boeing 737-800/900ER, 777-200ER, and 787-8/9 Dreamliner fleets. Most aircraft remained in Europe for the duration of the war, flying limited operations to repatriate stranded Israeli citizens or transport humanitarian cargo.

Air Haifa's three ATR-72-600s were promptly flown to Larnaca, while Arkia's fleet of A320s and Embraer E190s was relocated to Cyprus. IsrAir's eight Airbus A320s – all located at Ben Gurion – were evacuated to Larnaca on June 13. The sole Israeli cargo operator, Challenge Airlines IL, diverted one of its Boeing 747 freighters from Hong Kong to Baku. At the same time, two other aircraft of the airline, already in Liège, remained out of harm's way. Even the Israeli government's Boeing 767-338ER, Wings of Zion (4X-ISR), was evacuated to Athens International Airport as a contingency against high-value target strikes.

Notably, Israel's ability to centralise its defensive posture around a few hardened facilities – primarily Ben Gurion and Ramon airports – simplified protection and facilitated rapid dispersal. While Iran's vast but decentralised airport network made it difficult to defend all facilities, Israel's concentration of key assets allowed it to make more efficient use of layered air defence systems such as Iron Dome, David's Sling, and Arrow-2/3. Despite numerous attempts, the IRGC-ASF failed to strike either of Israel's main airports – a testament to Israel's air defence integration and missile interception density.

Air asset survivability

The twelve-day war between Iran and Israel in June underscored a critical but often overlooked dimension of modern high-intensity conflict: the survivability of air assets, both military and civilian, under sustained missile and airstrike pressure. For Iran, the war triggered the largest aerial evacuation operation in its history, involving more than 130 passenger aircraft from over 25 airlines, as well as the strategic relocation of IRIAF and IRGC-ASF tanker and transport fleets to domestic and foreign sanctuaries. For Israel, the war highlighted the fragility of concentrated infrastructure and the need for airborne fuel logistics, real-time ISR, and rapid dispersion of national airline fleets.

While both nations took extraordinary steps to preserve their strategic aviation capabilities, only one side had the benefit of a compact and defensible geography. Israel's centralised airspace, well-developed missile defence architecture, and robust American logistical support enabled a controlled and efficient response to Iranian retaliation. In contrast, Iran's sprawling network of airbases and civil airports created exposure gaps that Israeli planners exploited with devastating precision.

Ultimately, this shadow war in the skies offered a revealing preview of how future conflicts between technologically capable adversaries will unfold – not just in the realm of missiles and drones, but in the silent struggle to keep fleets aloft, protected, and survivable. As of August, both sides have drawn critical lessons, but the scars of this conflict will likely shape their air doctrine and strategic planning for years to come. **afm**

SOARING HIGH

Onur Kurc and Tayfun Yasar visit the Turkish Air Force's pilot training centre at Izmir-Cigli

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In a world of constant geopolitical shifts and evolving aerospace technology, the Turkish Air Force (TurAF) stands at the forefront, meticulously crafting the next generation of aviators. With a fleet of modern aircraft and cutting-edge equipment, the TurAF understands the critical need for highly skilled pilots who can master contemporary tactics and techniques. To achieve this, Turkey has cultivated a pilot training system, recognised globally, that not only nurtures its own talent but also trains pilots from allied and friendly air forces to stringent US and NATO standards.

Cradle of command

The journey to becoming a Turkish Air Force pilot begins at the prestigious National Defense University – Air Force Academy. Here, aspiring pilots embark on an intensive four-year programme that seamlessly blends rigorous academic and military instruction with invaluable practical flight training. Under the watchful eyes of seasoned instructor pilots, many of whom boast years of experience in various TurAF flight units, students take to the skies in T-41 aircraft.

The initial selection flights are a crucial hurdle: after 13 accompanied sorties with their instructors, promising candidates undertake their 14th as a solo flight. Throughout their academy years, they complete 15 T-41 and 7 glider flights, accumulating approximately 22-23 hours of flight time. The core objective of this foundational training is to meticulously assess each candidate's innate flying ability and characteristics.

Upon completing the demanding four-year curriculum, students graduate with the rank of Lieutenant. This marks the bedrock of the Turkish Air Force's comprehensive pilot education system.

Heart of flight training

The real piloting journey for these newly minted Lieutenants takes shape at the 2 Ana Jet Üssü (2nd Main Jet Base) in Çiğli, Izmir, a vital unit of the Air Training Command. Here, they systematically progress through Initial, Basic, and Advanced training phases. Upon successful completion, they are strategically assigned to various operational squadrons. The Çiğli base itself is a bustling hub, comprising five distinct squadrons.

The initial steps into jet flight training commence at the 123 Başlangıç Eğitim Filo Komutanlığı (123rd Initial Training Squadron Command), home to the SF-260D aircraft. Located just two miles west of the main base at Kaklıç Airfield Command, this squadron has been a training ground since 1989. The SF-260D, introduced in 1991, brought a faster and more modern edge to their training.

The focus here is on acclimatising candidates to the aircraft and their new environment, significantly boosting their self-confidence. Beyond the cockpit, they are immersed in the discipline of aviation, learning about flight preparation and flight training. This five-month phase includes intensive landing and take-off drills, along with in-depth instruction on the SF-260D. During this crucial period, pilots accumulate approximately 25 hours and 30 sorties, culminating in their first solo flights aboard the SF-260D.

Mastering the skies

Upon successfully navigating initial training, candidates advance to the 122 Filo (122nd

The SF 260Ds have been serving Turkish Air Force training at Izmir-Kaklic since 1991, flying with 123 Filo Baslangic Filo

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***A new MFI-17 Super Mushshak flies alongside two older Siai Marchetti SF 260Ds over the Aegean Sea** Images by the authors*

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TURKISH AIR FORCE
15

Squadron) for their basic training, transitioning to the more advanced Korean Aerospace Industries KT-1T. This phase is a multifaceted programme designed to hone their skills across various critical areas and includes Mission Phase (emphasising advanced control techniques and aerobatics), Instrument Phase (training pilots to navigate solely by instruments in challenging weather conditions), Formation Phase (instilling the techniques of close-formation flying, a skill vital for future combat operations), Navigation Phase (perfecting the art of precise point-to-point navigation using pre-planned altitude, time and direction data) and Night Flight Phase (covering night vision, lighting systems and fundamental night flight principles). Complementing the rigorous flight training, simulator exercises provide invaluable support, made up of 24 weeks and 69 sorties.

Upon successful completion of basic training, Lieutenants are then assigned to jet, helicopter or transport squadrons, based on their preferences and the squadron's evaluations.

Specialising in transport and rescue

For those chosen for helicopter and transport roles, training continues at 125 Filo (125th Training Squadron Command) utilising AS-532 Cougar helicopters and CASA CN-235 transport aircraft. This squadron holds the unique distinction of being the Turkish Air Force's sole unit providing comprehensive search and rescue, transport and pilot training.

Candidates undergo initial two-week ground training, followed by approximately 90 hours and 59 sorties in CN-235 aircraft. Successful candidates then go on to serve as pilots in the transport and logistics squadrons. This versatile squadron is also instrumental in all-weather, day-and-night search and rescue operations across land and sea.

Upon completing advanced training, transport pilots will specialise further on C-130, C-160 and CN-235 aircraft. C-130 and C-160 pilots proceed to combat readiness training at 221 Filo and 222 Filo in Kayseri, while CN-235 pilots continue their training at 212 Filo in Ankara-Etimesgut. Advanced transport training spans 24 weeks and 59 sorties

Meanwhile, helicopter pilots continue their combat readiness training with 125 Filo, with their advanced training consisting of 24 weeks and 51 sorties.

Four KAI KT-1T training aircraft in formation.

An instructor pilot in the rear seat supervises a student in the front of a KT-1T.

The CN-235s are used by 125 Filo to train multi engine transport pilots who will go onto fly the C-130s, C-160 or CN-235

To jet combat

For candidates destined to become fighter or fighter-bomber pilots, 121.Filo, known as 'Ari' ('bee' in English), provides all the essential skills and knowledge required for jet combat. This demanding eight-month programme dedicates two months to academic study and six to intensive flight training.

Advanced jet flight training involves approximately 70 sorties, including 12 crucial solo flights. The T-38M aircraft used in this squadron are central to this phase, with the primary focus for candidates being to master aerial control of the aircraft and execute safe landings. They also receive extensive training in formation flying, learning to control aircraft just a metre apart in the air Instructor-led flights covering instrument flying, low altitude and night operations, while solo flights encompass fundamental formations, contact flying, advanced formation and solo night flying. Full-featured dual-cockpit T-38 simulators provide vital support. Notably, the T-38M is the first aircraft on which pilot candidates experience their first supersonic flights.

After completing their training at the 121 Filo, pilots officially earn their 'wings' and are assigned to fly F-4E 2020s or F-16Cs. F-4E pilots continue their combat readiness training at 111 Filo in Eskişehir, while F-16C pilots continue their combat readiness training, focusing on advanced techniques and tactics with T-38Ms at 121 Filo.

Combat readiness

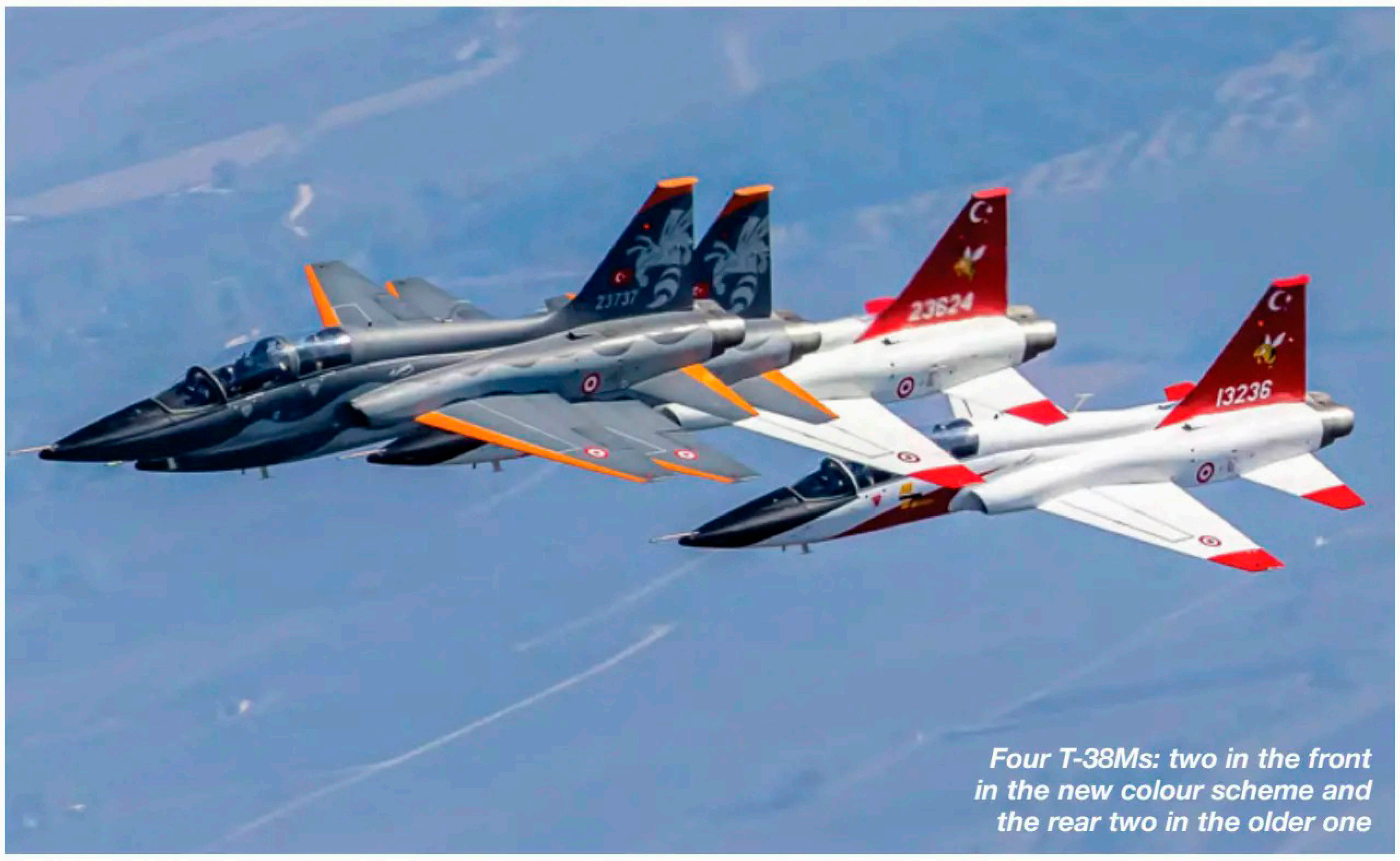
This advanced stage of training combines 69 hours of academic simulator training with approximately 32 hours of flight training. The latter is divided into two crucial areas: air-to-air and air-to-ground.

In air-to-air scenarios, the pilots focus on engaging with air-to-air missile threats, while air-to-ground training centres on air-to-ground munitions and missiles. The modernised T-38Ms feature a removable memory module, allowing flight data and conversations to be recorded and reviewed in 3D after each sortie, providing immediate feedback on errors and areas for improvement.

Replicating reality

The Turkish Air Force's commitment to cutting-edge technology is exemplified by its state-of-the-art simulators, developed and operated by the Turkish company Havelsan since 2013. The Simulator Squadron Command boasts an impressive inventory: 4 KT-1T full mission simulators (FMSs), 2 KT-1T instrument flight simulators and 4 T-38M FMSs. These advanced simulators, some featuring dual-cockpit designs for joint instructor-student operations, are run for 12 hours daily, with each flight considered an actual flight.

Simulation enablse training across various flight profiles, including familiarisation, visual, instrument, navigation and night flights for KT-1Ts, with additional formation flight training for T-38Ms. They can also simulate different weather conditions and emergency scenarios. This invaluable resource has led to significant reductions in live flight sorties – 12-15% in basic flight training and 17-20% in advanced training. All conversations and flight phases are meticulously recorded.



Four T-38Ms: two in the front in the new colour scheme and the rear two in the older one

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Fast jet students fly up to 70 sorties in the T-38Ms and will normally go on to fly fast jets, although some might become instructor pilots

Of the 73 T-38A Talons that were acquired from the USAF, 55 were upgraded to T-38M Aris standard

AS-532AL Cougar conducting a low altitude surface training sortie over the sea

Before and after each simulator flight, a 3D system allows students and instructors to conduct detailed briefings and debriefings, enabling a 3D review of all events and immediate error identification. Networking between simulator rooms allows pilots to conduct synchronised flights, even flying with colleagues in the virtual skies. With a remarkable 90-95% resemblance to real aircraft systems and continuous feedback from instructors and students ensures the simulators remain highly accurate, with Havelsan teams making immediate corrections as needed. Future developments aim to provide instant audible or visual error warnings to students.

Upholding standards

Maintaining consistent quality and standards across all fixed and rotary-wing aircraft training for newly graduated Lieutenants is paramount. This requires instructor pilots to possess the same exceptional knowledge and training discipline. Experienced pilots joining the squadrons undergo rigorous selection and examination processes, with successful candidates assigned as instructors at the 124 Standardisation Filo (124th Squadron Instructor Training, Standardization and Instrument Squadron)

A key responsibility of 124 Standardisation is conducting periodic check flights for all instructor pilots in the Çiğli training squadrons, ensuring a consistent high standard. Furthermore, students identified as having low performance by squadron instructors undergo final check flights with standardisation pilots. The outcomes of these flights can lead to significant decisions, even the termination of a student's piloting career, underscoring the critical role of this squadron.

The future

The Turkish Air Force is continuously investing in the future of its training fleet, with several exciting projects on the horizon. One of them is the MFI-17 Super Mushshak. In 2016, Pakistan Aeronautical Complex (PAC) Kamra won a tender to supply a modern and highly acrobatic two-seater training aircraft to the Turkish Air Force. A contract for 52 Super Mushshaks was signed in May 2017. The first aircraft, tail number 21-001, was delivered in 2022 for testing and evaluation, and deliveries are ongoing.

These Super Mushshaks will initially replace the venerable Cessna T-41D aircraft, which have faithfully served the TurAF since the early 1970s and are nearing the end of their operational life. T-41s are currently used for Air Force Academy student selection flights. In the future, the Super Mushshaks are expected to also replace the SF-260Ds used in initial training. This standardisation across student selection and initial training will not only reduce costs but enhance training quality and standards.

Hürkuş project

Turkish Aerospace Industries (TUSAŞ) has developed the Hürkuş, an advanced training and light attack aircraft tailored to the TurAF's needs, capable of fulfilling roles from initial training to challenging operational conditions. Designed as a single-engine, turboprop training aircraft with tandem seating, the

By using the T-38M simulator, students are effectively prepared for real-world flying missions

The tail of a T-38 at the 121 Filo entrance

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121'İNCİ JET EĞİTİM
FİLO KOMUTANLIĞI

The Hurjet is the future of fast jet training, with the first example due to be delivered in 2026 *Alan Warnes*

Hürkuş project has since expanded to include light attack and reconnaissance variants.

Building on this success, TUSAŞ has initiated the Hürkuş II project, aiming to further enhance the aircraft's capabilities. The Hürkuş II boasts a weight reduction of 400-500kg compared to the original, leading to improved performance and extended endurance with less fuel. The Turkish Air Force has placed an order for 55 Hürkuş II models, with 15 scheduled for delivery by the end of 2025 and the remainder expected in 2026 and 2027.

Next-generation jet training

The Hürjet project is TUSAŞ's answer to the Turkish Air Force's need for new jet trainers and the modernisation of its existing fleet. This manned jet training and light attack aircraft project, a testament to Turkey's growing domestic defence industry capabilities, began in 2017. After extensive engineering and R&D, the first prototype began production in 2019, undergoing various avionics and flight control system and ground tests. Following successful ground tests in 2022, Hürjet's flight test preparations commenced.

The highly anticipated maiden flight of the first prototype took place on April 25, 2023. By April 26, 2025, the Hürjet achieved an impressive 179 sorties over 118 hours of flight time, successfully completing flight control systems, air data systems and other tests. In October 2024, Hurjet demonstrated its capabilities by achieving supersonic flight, exceeding Mach 1.01.

The Turkish Air Force has ordered 16 Hurjet jet training and light attack aircraft, which feature a single engine, tandem seating and modern avionics. TUSAŞ aims to deliver the first Hurjets to Air Force Command in 2026, with a production target of two Hurtjets per month starting from 2025. These aircraft are planned to replace the TurAF's current T-38M jet trainers, in addition to being used for various operational missions. Furthermore, there are plans to replace the NF-5A and B aircraft, currently used by the Turkish Stars Aerobatic Team and nearing the end of their service life, with Hürjets in the future.

In a significant international development, a memorandum of understanding was signed between Turkey and Spain on December 20, 2024, for the procurement of 30 Hurjet aircraft. This agreement marks a crucial step for Hurjet's potential entry into the Spanish Air Force inventory. **afm**

Veteran UH-1 helicopters of the Turkish Air Force remain in service to train new helicopter pilots.

Bison bids farewell

After six decades serving the Indian Air Force, the MiG-21 has finally been stood down. **Atul Chandra** spent three days at Air Force Station Chandigarh to witness the retirement of the last MiG-21UPG Bison.

The Indian Air Force (IAF) pulled out all the stops to ensure that one of its most important combat types received a fitting send-off at Air Force Station (AFS) Chandigarh on September 26, when the 28 Squadron ‘Panthers’ – the last IAF squadron to operate the MiG-21 ‘Bison’ – said farewell.

The earliest MiG-21 variant, the MiG-21F-13 (Type-74), was delivered to the IAF in 1963 and since then, the IAF acquired 872 MiG-21s across various variants; India’s state-owned aerospace company Hindustan Aeronautics Limited (HAL) producing nearly 600 examples of the type under licence from the MiG design bureau.

Between 1966 and 1987, large-scale induction of various MiG-21s provided the IAF with quantity and quality. The service operated its MiG-21 variants in interceptor, ground attack and trainer roles, to name a few.

The formal decommissioning ceremony was marked by a large gathering of veterans who arrived to say goodbye to an iconic platform. It was at AFS Chandigarh that the MiG-21 was inducted into the IAF with 28 Squadron, the ‘First Supersonics’, in 1963.

Marking their final few moments with the IAF, seven MiG-21 Bisons, including a single-seater aircraft flown by Chief of the Air Staff, Air Chief Marshal AP Singh, were airborne. The aircraft participated in a flypast with Sepecat Jaguar strike fighters, followed by a joint flypast with the Tejas light fighter that is replacing the MiG-21 in IAF service. On their return, a ceremonial water cannon salute and the final engine switch-off of the Bisons in front of various dignitaries drew the type’s operational service with the IAF to an end.

Speaking following the retirement of the type, India’s Defence Minister Rajnath Singh said: “In every historic mission, the MiG-21 carried the Tricolour with honour. Its contribution has never been limited to a single event or battle, it has been a pillar of India’s air power for decades.”

MiG-21s in the IAF

The IAF principally operated three major variants of the MiG-21. The MiG-21FL ‘Trishul’ (Type-77) was inducted between 1966-74, followed by the MiG-21M ‘Badal’ (Type-96) between 1973-81 and the MiG-21bis ‘Vikram’

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A pair of IAF MiG-21 Bisons stand silent following the culmination of the type’s service with the IAF in September. In total, the IAF operated six squadrons of the type, along with some examples flying with the Tactics and Air Combat Development Establishment (TACDE)

Three IAF MiG-21 Bisons receive a final water canon salute at AFS Chandigarh on their return from a formation flypast, prior to their retirement from service on September 26 *Images Zone Victor, unless stated*

Above: ***The six pilots tasked with flying the last sorties of the MiG-21 in IAF service are pictured here, including the commanding officer of 23 Squadron 'Panthers' (third from left). Air Chief Marshal AP Singh also joined the formation, flying a MiG-21 Bison single-seater (callsign 'Badal 3')*** *Indian MoD*

The MiG-21 Bison Document Form-700 being handed over to the Chief of the Air Staff, Air Chief Marshal AP Singh by the commanding officer of 23 Squadron. India's Defence Minister Rajnath Singh (second to right) is standing with Air Marshal Jeetendra Mishra, Air Officer Commanding-in-Chief Western Air Command next to him *Indian MoD*

(Type-75) that was inducted between 1978-87. A few examples of the MiG-21PF (Type 76) were inducted earlier in March 1965 and, later that year, the air force received its first MiG-21U (Type 66) tandem-seat trainers.

HAL began assembly of the MiG-21FL in 1966, eventually producing a total of 205. Induction of the more versatile MiG-21M began towards the end of the 1960s, with 48 aircraft imported directly from the Soviet Union. Licence production of this variant began in India in 1973 with the last of 158 aircraft delivered in 1981.

India chose to retain the same engine for the MiG-21FL and the MiG-21M in the Tumansky R-11 turbojet, compared with the uprated R-13 of the MF variant. The IAF did evaluate two MiG-21M aircraft, one fitted with the R-13 and another with the R-11. However, over the course of evaluations between 1973-75, it was found the R-13 did indeed provide a noticeable improvement in performance at low and medium altitudes – but, the R-11 was selected as the engine was already being produced under licence in India by HAL.

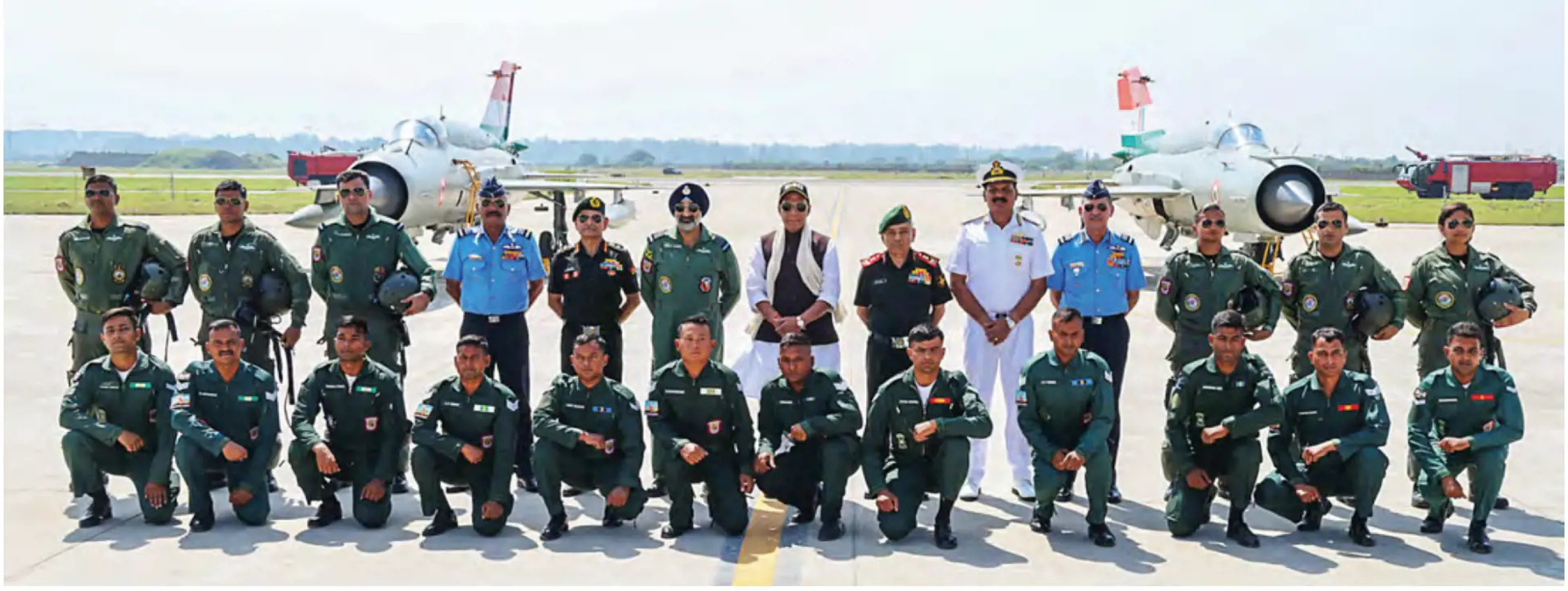
The MiG-21bis powered by the R-25-300 engine was the final Russian evolution of the delta-winged fighter. The more powerful R-25 delivered 4,100kg of max dry thrust and 6,850kg of thrust in maximum reheat; 75 aircraft were imported directly from the Soviet Union and at its peak, ten IAF squadrons were equipped with the MiG-21bis. These aircraft had an airframe life of only 1,200 hours with major overhauls due at 600 hours.

The bis variant was armed with the GSh 23mm cannon and could carry four 250kg or two 500kg dumb bombs. Air-to-air armament initially comprised R3S IR-homing missiles or R3R radar-guided missiles, with French Magic-I IR homing missiles being integrated later. Two UB-32 rocket pods could be carried on the inner pylons along with two UB-16 rocket pods on the outer pylons.

The last of the IAF's long-serving MiG-21FLs were phased out in December 2013, when four examples belonging to the Kalaikunda-based Operational Conversion Unit (OCU) in West Bengal were retired from service. At that time, approximately 80% of the IAF's fighter aircrews had flown the MiG 21FL and 90% had flown at least one variant of the MiG 21 at some stage in their flying careers.

A pair of MiG-21 Bisons take to the air for the final time with the Indian Air Force on September 26 at AFS Chandigarh. The type's retirement marks the end of the IAF's long association with the Russian delta-winged fighter that spanned 62 years, with more than 870 aircraft acquired *Indian MoD*

CU2803
CU2818



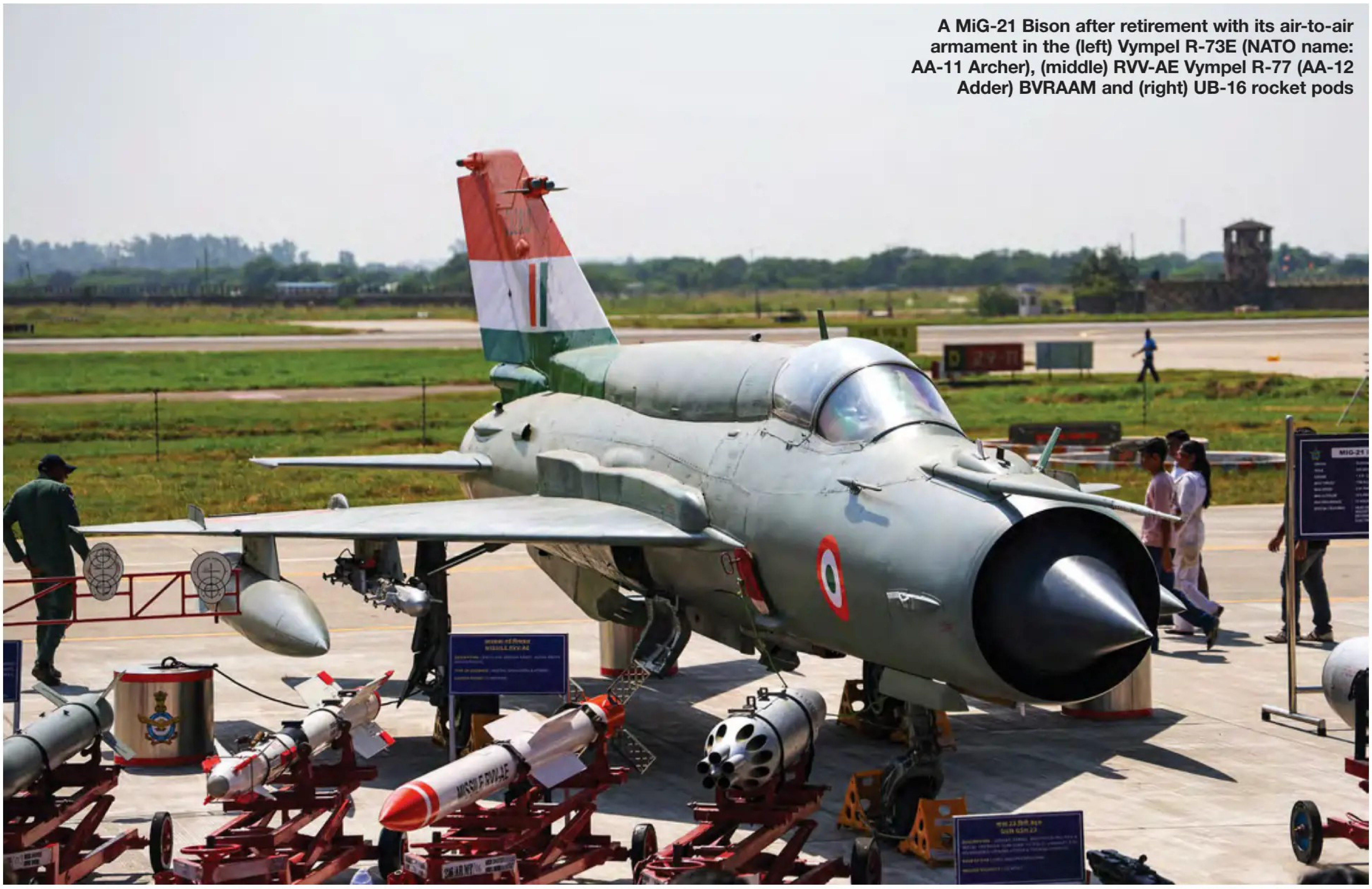
Above: ***A galaxy of the Indian military's serving top brass were present for the retirement of the MiG-21 from IAF service. Flanked on either side by the six pilots who flew the Bison on its retirement are, from left to right: Air Marshal Jeetendra Mishra Air AOC-in-C, Western Air Command; Chief of the Army Staff General Upendra Dwivedi; Chief of the Air Staff Air Chief Marshal AP Singh; Defence Minister Rajnath Singh; Chief of Defence Staff General Anil Chauhan; Chief of the Naval Staff Admiral Dinesh K Tripathi; and Vice-Chief of the Air Staff Air Marshal Narmdeshwar Tiwari*** *Indian MoD*

The last MiG-21M was phased out in December 2017, with the bis variants following soon after. In October 2023 – when 4 Squadron 'Oorials', which had continuously operated different variants of the MiG-21s since 1966, converted from the Bison to the Su-30MKI – the IAF was left with only two squadrons of the type.

Bison to the fore

The MiG-21bis was the most formidable variant of the diminutive delta-winged fighter operated by the IAF. Inducted into the IAF in 1978, it

Generations of IAF pilots and maintenance crew trained and honed their skills on the MiG-21 and pictured here are the next generation of the air force delivering a hearty farewell to their long-serving mount



A MiG-21 Bison after retirement with its air-to-air armament in the (left) Vympel R-73E (NATO name: AA-11 Archer), (middle) RVV-AE Vympel R-77 (AA-12 Adder) BVRAAM and (right) UB-16 rocket pods

ISSILE RVV-AE

An IAF MiG-21U Mongol twin-seat trainer is pictured following the type's retirement from service. The IAF did not upgrade any of its MiG-21 trainers to Bison standard

was licence-manufactured by HAL with 220 produced by 1987, with the IAF operating 210 of these aircraft by 1995.

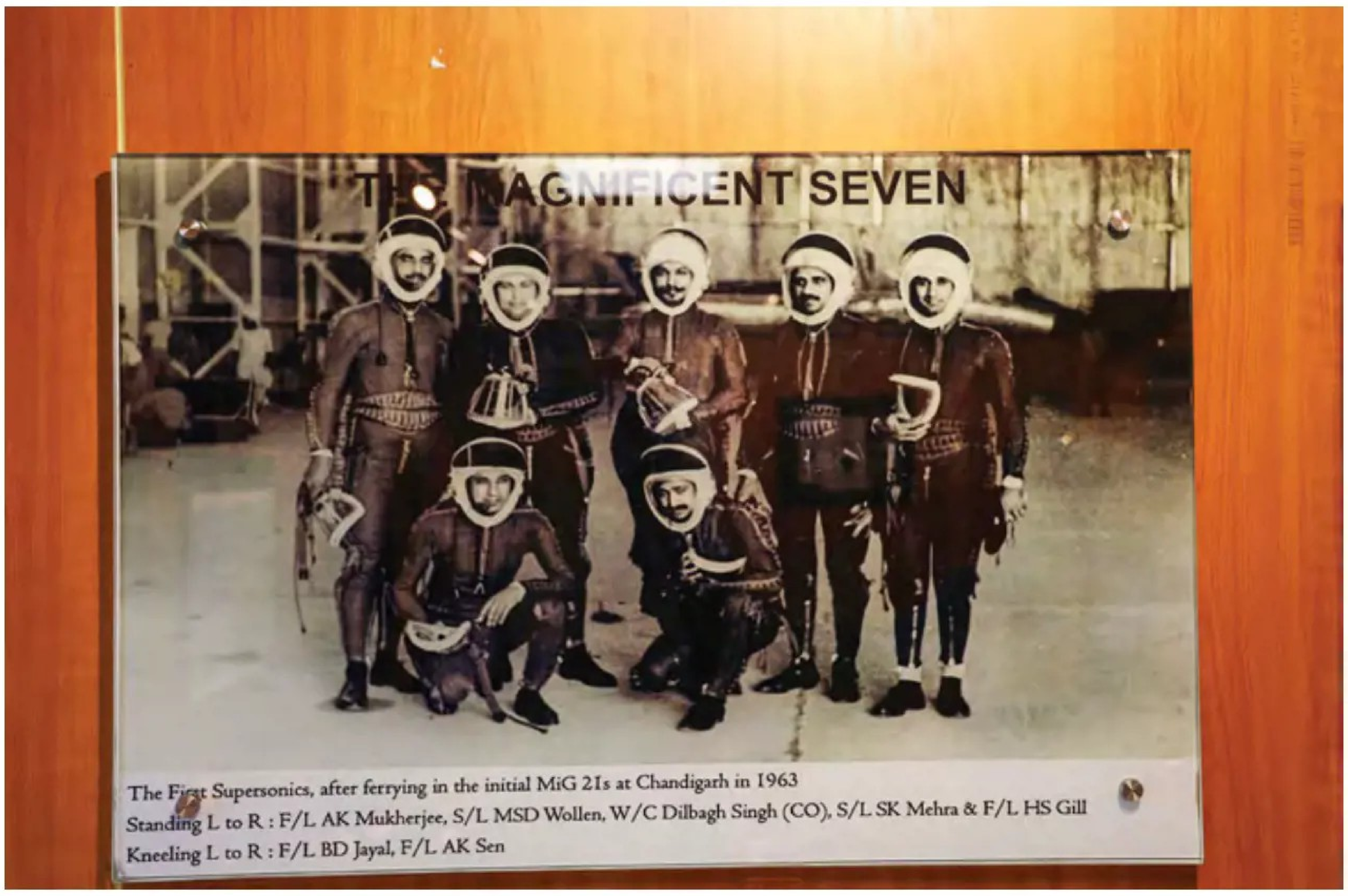
The MiG-21UPG initiative was aiming to deliver an air defence fighter with limited ground-attack capability. The IAF was eyeing an upgrade of its MiG-21bis fleet and, following the collapse of the Soviet Union in late 1991, the Russian Federation proposed an upgrade to the type in 1992. This was approved by the government of India in January 1996 with a formal contract inked later that year. The upgrade at that time was estimated at US$570 million, but eventually grew to $626m. MiG-MAPO (Moscow Aircraft Production Organisation) touted that the upgrade would convert the second-generation fighter aircraft to a fourth-gen one. A tall claim indeed!

The IAF decided to upgrade 125 MiG-21bis aircraft to the MiG-21UPG 'Bison' ('son of Bis') standard, which would include two prototype aircraft (C 2777 and C 2769) for modification and flight testing. The upgraded aircraft duly received the serial CU 2777 and CU 2769, respectively.

The Bison received a new multi-mode pulse-doppler radar in the Phazotron Kopyo-I (Spear), Ring Laser-based Inertial Navigation System (INS), Global Positioning System (GPS), indigenously developed Tarang Radar Warning Receiver (RWR), Counter Measure Dispensing System (CMDS), Self Protection Jammer (SPJ) pod and new air-to-air and air-to-ground weapons (KAB-500 TV guided bomb). As an interesting aside, the Russians charged India US$840,000 per Kopyo radar, which was a smaller version of the Zhuk-ME radar on the MiG-29.

The indigenous 'Tarang' RWRs were developed by the Defence Avionic and Research Establishment (DARE) in Bangalore and produced by Bharat Electronics Limited (BEL) Bengaluru. The most important upgrade to the type's aerial weaponry was the integration of the Vympel R-73E (AA-11 Archer) close-combat missile (CCM) and Vympel R-77/RVV-AEE (AA-12 Adder) BVR air-

IAF MIG-21 Bisons were upgraded primarily to enhance their interception capability. However, the type had a more than useful secondary ground attack capability, as evidenced by the range of weapons and ammunition displayed here


THE MAGNIFICENT SEVEN
The First Supersonics, after ferrying in the initial MiG 21s at Chandigarh in 1963
Standing L to R : F/L AK Mukherjee, S/L MSD Wollen, W/C Dilbagh Singh (CO), S/L SK Mehra & F/L HS Gill
Kneeling L to R : F/L BD Jayal, F/L AK Sen

Pictured, the initial batch of Indian pilots who ferried the first MiG-21F-13s (Type-74) to India Author collection

to-air missiles. The first of the RVV-AEs was delivered to the IAF in 2002 and the missiles had a shelf-life of eight years.

Cockpit display upgrades included a head-up-display (HUD), multi-function display (MFD) and helmet-mounted sighting device (HMSD). The hands-on-throttle and stick (HOTAS) concept was also incorporated, as was a video recording system (VRS). Externally, the biggest change was the incorporation of a single-piece front windshield and an HMSD compatible canopy. Several indigenous avionics systems were integrated, too. The Total Calendar Life / Total Technical Life of the upgraded aircraft was extended to 40 years as part of the upgrade, in addition to airframe modifications for carriage of SPJ pods.

The first Russian-modified MiG-21 Bison made its maiden flight from Nizhny Novgorod on October 1, 1998, though the official first flight was conducted on October 3. Hindustan Aeronautics was to have completed the modification of all aircraft at its Nasik Division by September 2001.

No. 3 Squadron was the first to induct the MiG-21 Bison and the last of an eventual 123 upgraded aircraft was delivered by HAL to the IAF in 2008. In total, the MiG-21 Bison operated with six IAF squadrons, in addition to being flown by the Gwalior-based Tactical and Combat Development and Training Establishment (TACDE). All maintenance activities relating to I and II line servicing of Bison aircraft were carried out at operating bases, with III and IV line servicing by HAL Nasik. Interestingly, while HAL has long since ceased production of MiG fighters in India, it continues to manufacture and overhaul Sukhoi SU-30MKIs at its facility which is still named the 'MiG Complex' in Nasik!

Force multiplier

In total, 27 IAF squadrons/establishments were equipped with the MiG-21 with the type showcasing its combat prowess in the 1971 war with Pakistan, with four Pakistani F-104s, two F-6s, one F-86 Sabre and a Lockheed C-130 Hercules downed. The pin-point rocket strikes by MiG-21s on the Governor's House at Dhaka also proved to be a turning point in the war. Decades later, MiG-21s were pressed into service during the 1999 Kargil War and again during Operation Balakot in 2019 and most recently during Operation Sindoor, earlier this year. It is perhaps fitting that the MiG-21 was on the front line again, even as its decades of service came to an end.

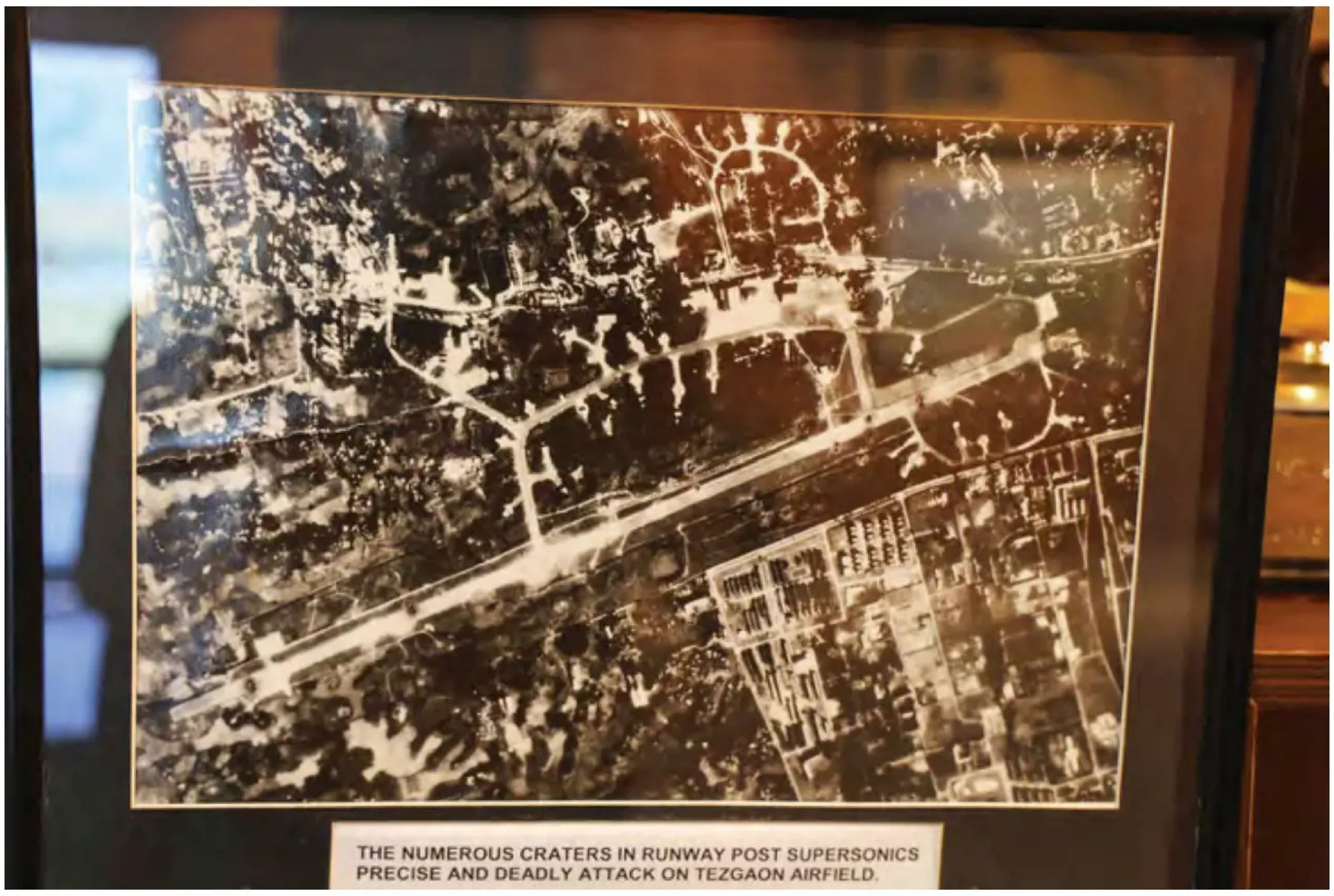
For the IAF, its MiG-21 variants allowed it to grow into a powerful air arm, while the final 'Bison' variant enabled it to retain its combat squadron strength. There is no doubt that the MiG-21 leaves behind a tremendous legacy within the IAF, even though its public image has been tarnished by questions about the type's accident rate, resulting in unsavoury nicknames such as 'flying coffin'.

As a fighter designed in the 1950s, with the definitive MiG-21bis ready in the 1970s, the aircraft was difficult to fly, just like many others of its era, such as the F-104 Starfighter. Speaking at a seminar following the type's retirement, former air force chief, Air Chief Marshal BS Dhanoa said that across 15,84,522 total service flying hours with the IAF, the MiG-21 had 468 accidents. Its accident rate of 2.95 matched that of the swing-wing MiG-23 (2.95) and was similar to MiG-27 (3.04), but much lower than the Hawker Hunter (4.26) and Folland Gnat (6.88).

The retirement of the MiG-21 fleet leaves the IAF with only 29 fighter squadrons. The IAF anticipated the retirement of 12 squadrons of MiG-21s and MiG-27s in ten years, a situation that has now come to pass with no early replacements in sight. The delays in the Tejas programme over the decades forced the IAF to retain its MiG-21s far longer than originally envisaged. As an example, the MiG-21 Bison fleet was initially scheduled for retirement in 2017, a story not too dissimilar from Poland's Su-22 *Fitter* (see *A Fitting Farewell*, page 28-33).

The IAF now has 180 indigenously developed Tejas Mk-1A fighter aircraft on order from HAL, a type that is far more than a 'like-for-like' replacement for the MiG-21 Bison and a truly multi-role platform. The air force has also made its preference clear for the procurement of 114 additional Dassault Rafale fighter jets. As a result, nearly 300 modern fighter jets will be inducted into the IAF over the next ten to 15 years, with other new inductions also planned.

The MiG-21 was often the first choice for IAF commanders as it provided unmatched flexibility due to its unique attributes of high agility, fast acceleration and quick turn-around. It is to the credit to the IAF and HAL that the aircraft remained relevant and supportable as long as it did. Even its final few weeks in service, IAF MiG-21 Bisons were flying extensively, as observed by the author. In the final analysis, it was the MiG-21 that built the foundations of the modern Indian Air Force, as we know it today and its legacy will be taken forward by another single-engine fighter type, the indigenously-built Tejas Mk-1A. **afm**


THE NUMEROUS CRATERS IN RUNWAY POST SUPERSONICS
PRECISE AND DEADLY ATTACK ON TEZGAON AIRFIELD.

The precision rocket attacks carried out by the 'First Supersonics' with their MiG-21s is evident in this image of Tejgaon airfield (now in Bangladesh) during the 1971 war Author collection

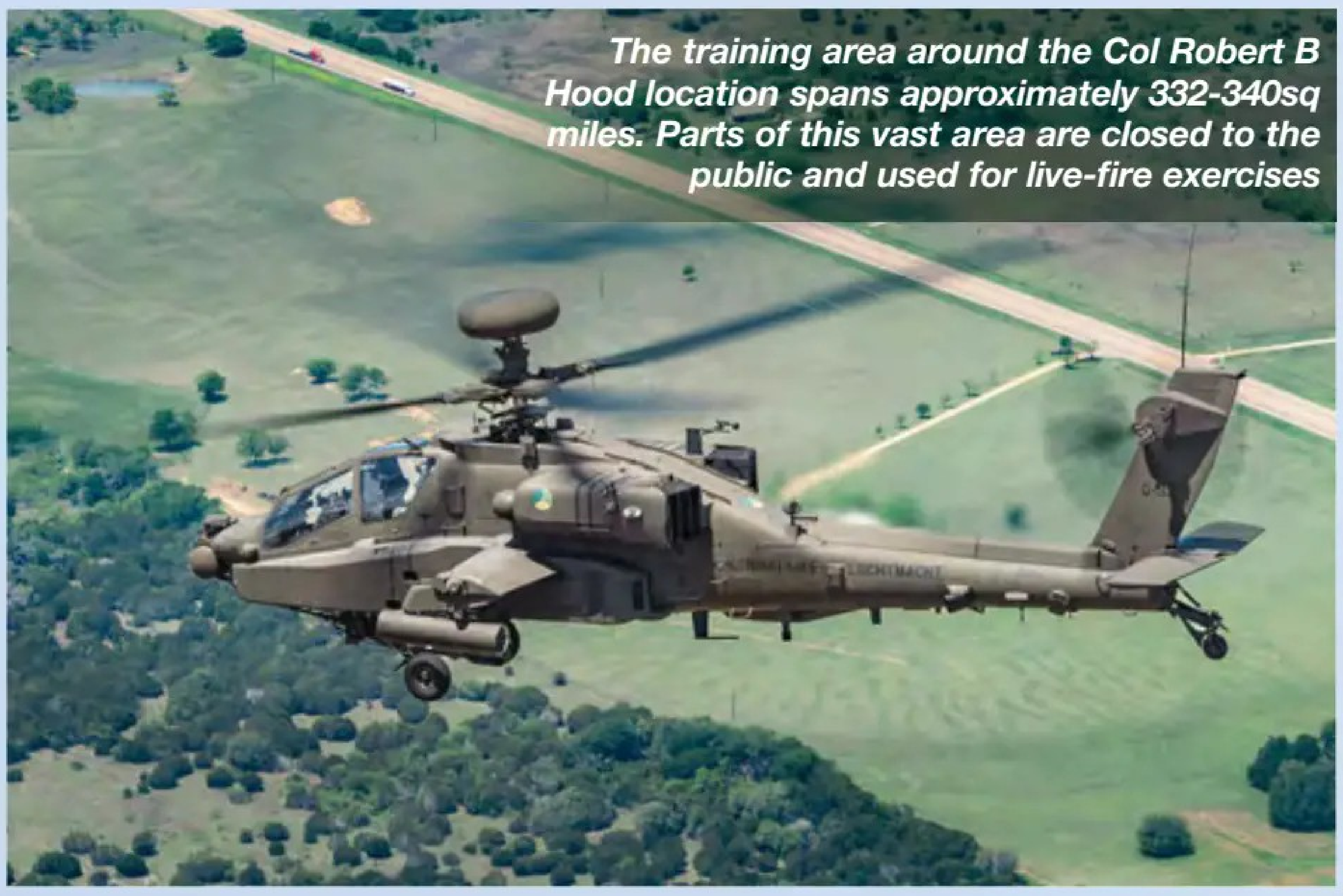
PREPARING FOR LARGE SCALE OPS

302 SQUADRON
DOELBEWUST EN TREFZEKER

New Apache and Chinook helicopters are now flying at Robert Gray Army Airfield in Texas. **Frank Visser** spoke with Lt Col Wilko de Waard, current Commander of 302 Squadron, about the mission of this Dutch squadron, which is integrated within the US Army's 166th Aviation Brigade and part of the 1st Army

A CH-47F MYII CAAS Chinook, followed by two AH-64E Apaches from 302 Squadron, take to the skies at Robert Gray Army Airfield. A US Army 166th AVN AH-64 at the end of the runway observes the spectacle unfolding before it
Unless otherwise noted, *all images Cristian Schrik/ Dutch MoD*

A CH-47F MYII CAAS Chinook skims over the Texan landscape. Currently, 302 Squadron has five brand new CH-47F MYII CAAS helicopters in its inventory



The training area around the Col Robert B Hood location spans approximately 332-340sq miles. Parts of this vast area are closed to the public and used for live-fire exercises

A 302 Squadron AH-64E Apache skims low over the Texan training area surrounding the Col Robert B Hood location and Robert Gray Army Airfield. This makes the location ideal for RNLAF training operations

In the early 1990s, the Royal Netherlands Air Force (RNLAF) decided to acquire 30 Boeing AH-64D Apache helicopters. In 1996, the RNLAF began operating 12 leased AH-64As from the US Army under the Tactical Helicopter Group of the Royal Netherlands Air Force (THGKLu). These helicopters served as a stopgap until the first AH-64Ds were delivered and were divided between two units, 301 and 302 Squadrons, both originally based at Gilze-Rijen Air Base (AB) in the Netherlands. Eventually, in 2005, 302 Squadron merged with 301 Squadron.

Immediately after the purchase of the helicopters, a search began for a suitable training location. In 1996, the first group of Dutch personnel arrived a Fort Hood. This location, situated in the heart of Texas, proved highly suitable for training future Apache pilots, thanks to the vast training areas surrounding it. Over the years, this base has developed into a multifunctional training centre, where the RNLAF and the Royal Netherlands Army (RNLA) 11th Air Manoeuvre Brigade (11AMB) execute joint training programs. This cooperation led to the establishment of the Joint Netherlands Training Detachment (JNTD), which moved along with the Apaches to nearby Robert Gray Army Airfield. With the arrival of the CH-47F Chinook helicopters in 2013, it was also decided to conduct Chinook pilot and loadmaster training at this location.

In the same year, due to expanding responsibilities, the JNTD was transformed into a squadron structure, and consequently, 302 Squadron was reactivated. Since then, it has been part of the US Army's 166th Aviation Brigade.

To this day, Apache and Chinook pilots and loadmasters undergo their training in Texas, completing their Mission Qualification Training (MQT) before Apache pilots join 301 Squadron and Chinook pilots and loadmasters go to 298 Squadron, both stationed at Gilze-Rijen AB. Currently, 302 Squadron operates six AH-64E Apaches and five CH-47F MYII CAAS (Common Avionics Architecture System) Chinook helicopters. With the delivery of the last two AH-64Es by the end of 2026, the squadron will have eight Apaches in its inventory.

Mission

The primary responsibilities of 302 Squadron are Mission Qualification Training (MQT) and the American Falcon exercises. The MQT trains new pilots on the AH-64E Apache and pilots and loadmasters on the CH-47F MYII CAAS Chinook helicopters to ensure the operational readiness of both helicopter squadrons. Over the course of ten weeks, they receive tactical training for operational deployment from the Netherlands. Due to the transition from the AH-64D to the AH-64E and the CH-47D/F to the CH-47F MYII CAAS, the focus over the past two years has been on bringing operational pilots up to date with the new aircraft types, a process completed in

Currently, six new AH-64E Apaches and five CH-47F Chinooks provide 302 Squadron with the capability to enhance the quality of their training further.

2024. “We have the capacity to train four Apache pilots, four Chinook pilots, and four loadmasters simultaneously in each MQT,” de Waard said.

Every MQT starts with classroom instruction before progressing to flight training on the respective helicopters. A platoon-sized unit from the Air Manoeuvre Brigade supports the final five weeks. Each MQT emphasises tactical operations, situational awareness, multi-ship and multi-type missions, conducted day and night, and all candidates are evaluated during the entire ten weeks. Additionally, AH-64E pilots must pass a Helicopter Gunnery Skills Test before they are allowed to participate in live fire exercise missions. In consultation with the DHC, 302 Squadron also undertakes smaller assignments, such as training small units that utilise the Texas training area and helicopters. Occasionally, the squadron’s helicopters are lent to the 166th Aviation Brigade to keep their pilots current. “This only happens sporadically due to our own tight schedule. The team is incredibly focused and driven – I sometimes have to remind them to rein it in. My focus is on the MQTs and American Falcon exercises,” de Waard said.

During an American Falcon exercise, various large-scale combat operations are practised, such as here during the briefing for Operation Daytona, in which Apaches, Chinooks, and the 11th Air Manoeuvre Brigade aim to secure a specific objective Northern Skies Aviation

American Falcon

American Falcon exercises are designed to prepare the RNLAF and the RNLA 11AMB for large-scale combat operations. “American Falcon is what we are known for,” de Waard stated. “We conduct three or four of these exercises each year.” The number depends on the availability of the 11AMB. A company from the 11AMB participates in each five-week-long exercise, joined by operational pilots and loadmasters from 301 and 298 Squadron. The exercises simulate realistic enemy ground forces using various simulation systems operated by 302 Squadron. To enhance realism, Joint Terminal Attack Controllers (JTACs) and US Army General Atomics MQ-1 Gray Eagles and Beechcraft MC-12 aircraft are integrated, if available and necessary, to achieve the American Falcon goals. Locally borrowed military personnel assist with security, logistics, and Opposing Force (OPFOR) roles. The first exercise of the year took place in February. The second exercise, in June, was a so-called American Falcon 2.0 version. The third, in August, was an air-only exercise without participation from the 11th Airborne Medical Battalion.

“We are seeing a shift from core task 2 (wars of choice) to core task 1 (wars of necessity),” said de Waard. American Falcon 2.0 introduces new training formats for peer adversary scenarios, emphasising operations against integrated enemies. The planning and command structure is also evolving, with more separated processes and direct orders issued by battalion and squadron commanders. It introduces separated operations, deeper Apache deployment, and updated tactics.

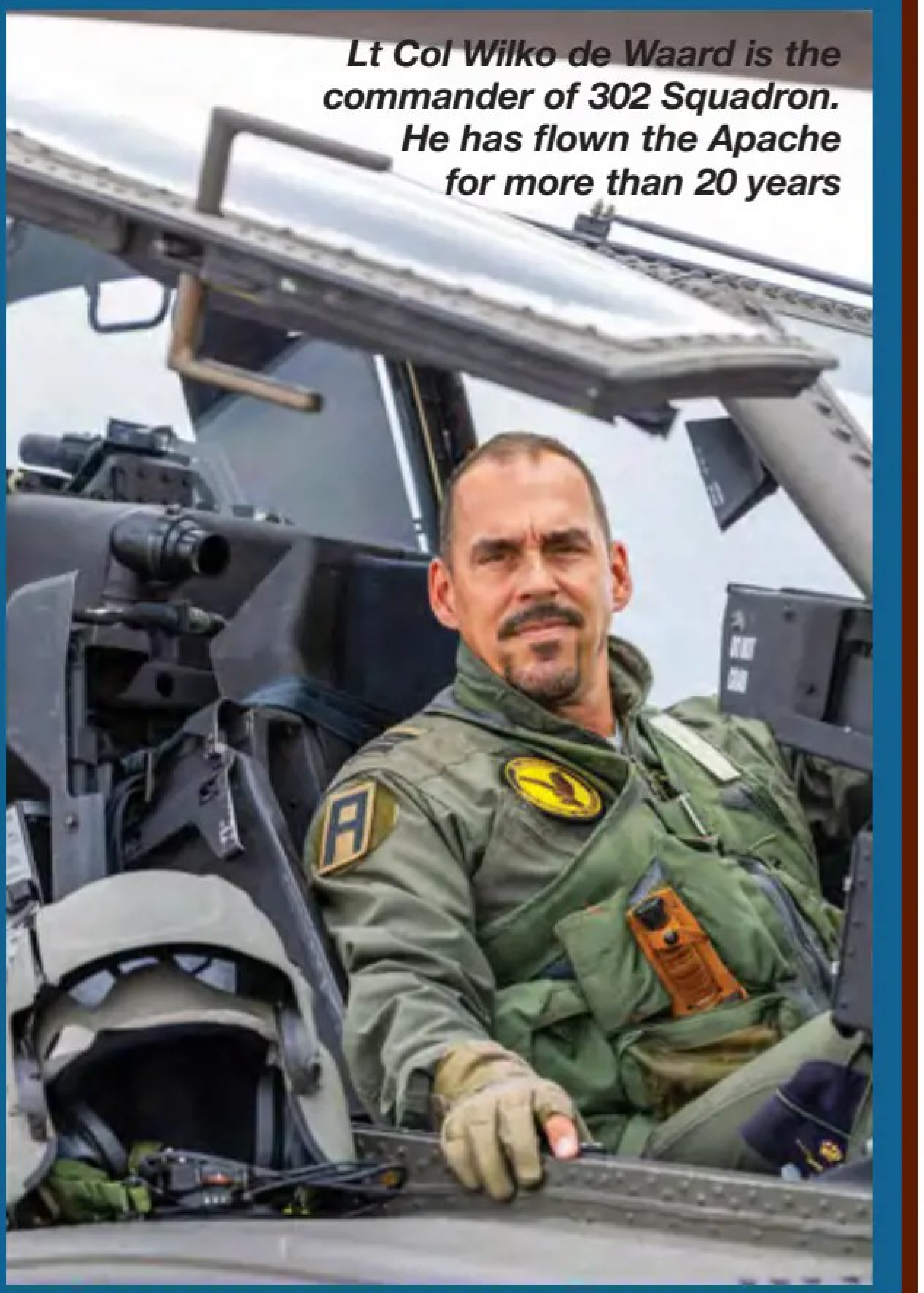
Transition

Though the mission of the squadron hasn’t changed significantly, the transition to new Apache Echo and Chinook Foxtrot models has had a considerable impact. The Apache Echo offers better network integration and increased power, enhancing agility. “The improved connection between ground-based weapon systems and data transfer has made the Apache more efficient in operations,” noted de Waard.

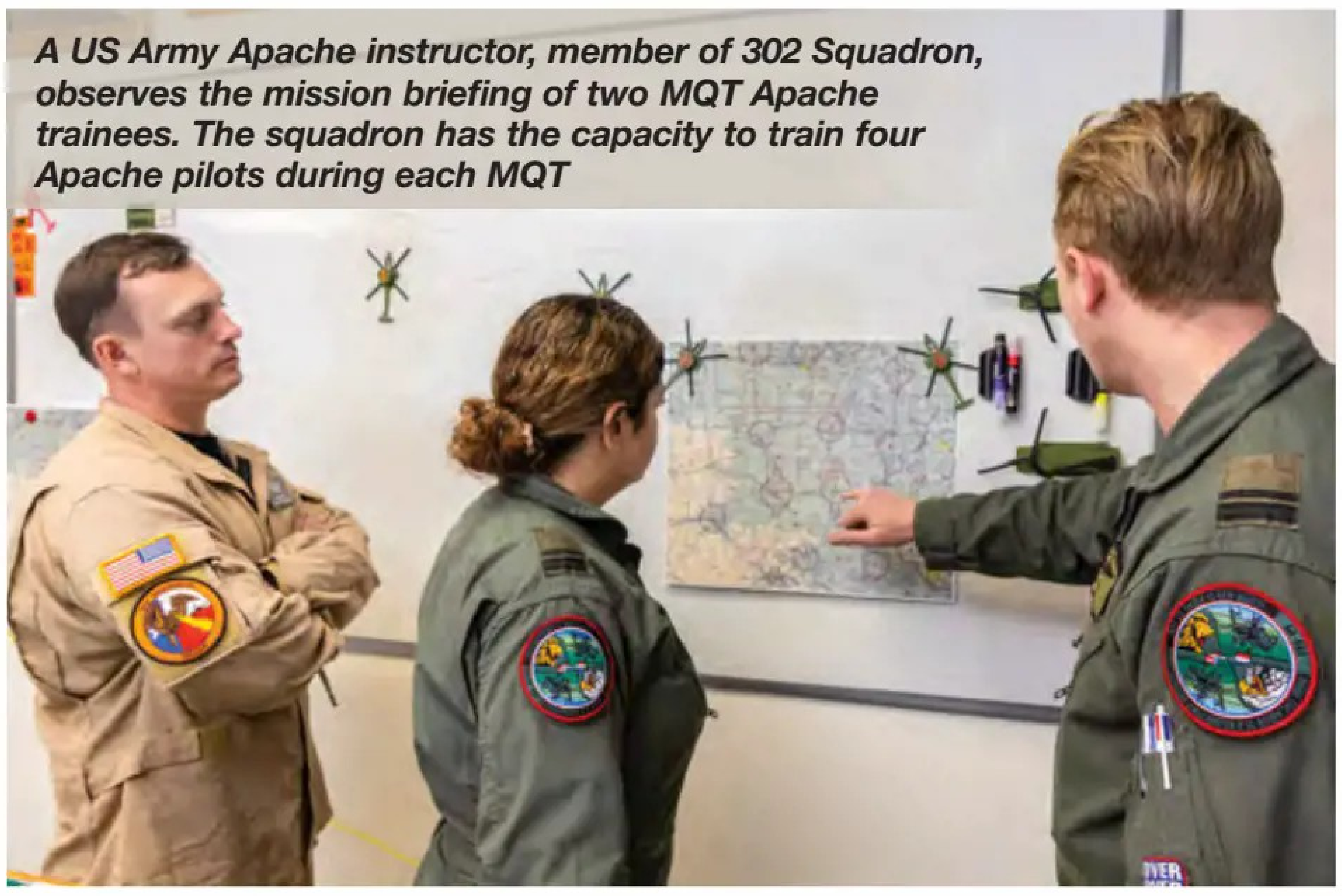
Stronger engines enable greater operational flexibility. The upgrades focus on weapon systems, including fire control radar and fire-and-forget missiles. “The decision to adopt the Joint-Air-to-Ground Missile (JAGM) is a prime example of this. Besides the United States, we are the first country to procure this missile,” said de Waard.

Lt Col Wilko de Waard

Lt Col Wilko de Waard began his defence career in 1997 at the Royal Military Academy (KMA). Initially on track to become an officer in the Army, he switched to the Air Force in 1999 when the first leased Apaches were arriving in the Netherlands. He immediately felt drawn to this type of helicopter. He focused his thesis at the KMA on Army Aviation, specifically the integrated use of Air Force helicopters with the Army, a novel concept in the Netherlands at the time. After graduating from the KMA, he attended the Elementary Military Flight Training (EMVO) program, flying the Pilatus PC-7. He successfully transitioned to helicopter training at Fort Rucker, Alabama, and then moved on to Apache conversion training at 302 Squadron in the Netherlands. When 301 and 302 merged, he transferred to 301 Squadron as a back-seater, eventually transitioning to a front-seater and rising through the ranks to become a flight commander. He was deployed to Afghanistan six times. Promoted to major, he served as Head of Operations at the Defence Helicopter Command (DHC) Plans section, collaborating extensively with the Dutch Army in preparation for exercises and missions. Later, he was deployed as U3 Air to Mali, where he worked at the UN headquarters in Bamako and helped establish the Dutch Apache detachment in Gao.


Lt Col Wilko de Waard is the commander of 302 Squadron. He has flown the Apache for more than 20 years

Back in the Netherlands, he became Apache product manager at Woensdrecht Airbase, enhancing his knowledge of systems and processes. He later became Head of Operations at 301 Squadron and completed the Dutch Advanced Command and Staff Course. He then served as Head of the Apache section within the Helicopter Operations Department. Now, as Commander of 302 Squadron, he also serves as a tactical trainer for the AH-64E. Reflecting on his work, de Waard said: “What is great about my career is how seamlessly each role has led into the next. The knowledge I have built and the processes I have learned have prepared me for each new position. Here at 302 Squadron, everything about Air Force-Army integration and international networking comes together.”



A US Army Apache instructor, member of 302 Squadron, observes the mission briefing of two MQT Apache trainees. The squadron has the capacity to train four Apache pilots during each MQT

Entirely focused, this Apache pilot enters the data into the computer before the mission begins

In 2013, the RNLAF received six new CH-47F Chinooks. Three of these aircraft were part of 302 Squadron. The six CH-47F Chinooks have been upgraded to CH-47F MYII CAAS Chinooks and now carry the serial numbers D-601 through D-606 *Northern Skies Aviation***.**

After the Chinook pilots and loadmasters have completed their MQT at 302 Squadron, further training takes place in the Netherlands at 298 Squadron *Northern Skies Aviation.*

Two 302 Squadron CH-47F Chinooks arrive on site to train for the evacuation of wounded soldiers

For the Chinook F-model, most changes are in the cockpit. The CH-47F MYII CAAS features an automated cockpit and an enhanced mission management system. "Since switching to this helicopter, we haven't missed a single landing spot," de Waard commented.

A digital flight control system supports pilots by significantly reducing their workload. The redesigned rear cabin allows faster loading and unloading. Another benefit is full integration with US Army helicopters and tactics, which simplifies certification, software updates, and the deployment of new weapons systems. Logistics are now managed by the US Army, the Dutch Command Air Forces (CLSK), and Boeing. "The lesson learned from this transition is that once we make decisions, we must stick to them. Changing things mid-process only delays progress," de Waard said.

Goals

Over the past three decades, the RNLAF detachment in Texas has undergone an impressive evolution. Initially focused on training Apache pilots, the unit has significantly expanded its scope with the addition of the CH-47Ds and CH-47Fs, ensuring that both air and ground crews are trained to the highest level for global missions. A strong relationship with the US Army has developed, with 302 Squadron earning considerable goodwill. In addition to annual MQTs and American Falcon exercises, 302 Squadron remains flexible. For example, a German pilot and loadmaster are currently participating in the MQT. Not part of an exchange programme, but to help them better understand the CH-47F before Germany begins its own transition (Germany ordered 60 Chinooks in 2022 to replace the Sikorsky. CH-53s).

"My main goal is to focus on quality and realistic training. I made it clear early on that we must stick to our core tasks and not overextend our capacity," said de Waard. This approach resonates well with his team. "They have embraced this mindset, allowing us to take steps like implementing American Falcon 2.0. That makes me proud of both our hardworking team, including the US contractors who support us. Because we are not a conventional squadron, the bond among personnel is different from that in the Netherlands. That makes this squadron so special and makes me proud to be their commander." **afm**

Modernising ITALY'S multi-engine training

The Italian Air Force's air transport training school uses the Piaggio Aerospace P180 to train pilots for multi-engine aircraft. **Riccardo Niccoli** reports from Pratica di Mare airbase on the updated version of the aircraft that entered service this year

SCUOLA ADDESTRAMENTO
TRASPORTI AEREI

Above: ***The badge of the SATA, introduced in December 2023***

EVO
14-51
AERONAUTICA MILITARE

The Aeronautica Militare (Italian Air Force – AM) started to operate the twin turboprop engine Piaggio P.180 Avanti in 1993, when the first of six aircraft was delivered. This type was used mainly for light transport and liaison missions on behalf of the highest commands. In the following years, a second batch of nine aircraft was ordered, with deliveries ending in 2005.

In 2009, the AM activated the Centro Addestramento Equipaggi Multi-Crew (multi-crew training center – CAE-MC) at Pratica di Mare to train pilots destined to fly multi-engine aircraft. This unit received on loan eight P.180s from the 71° Gruppo of the 14° Stormo, the squadron that controlled the whole fleet of 15 aircraft. In December 2023, the CAE-MC was redesignated Scuola Addestramento Trasporti Aerei (air transport training school – SATA).

The need for a new aircraft

The first version of the Avanti, designated VC-180A by the Italian Armed Forces Mission Design Series, has been in service for more than 25 years. As a result, obsolescence was starting to creep in, and in order to maintain the operational situation, modernise, and reinforce the Avanti fleet, the Stato Maggiore Difesa (Defence Staff) decided on 12 June 2019, to negotiate a new contract with the Piaggio Aerospace company. The Operational Requirement called for the acquisition of five new examples of the P.180 Evo+, four new P.180 Evo+ in Radiomisure (flight calibration) configuration, and the upgrade of all 19 examples of the P.180 still in service with the four armed forces, together with the acquisition of a Class D Full Flight Simulator. Also included was an integrated turn-key logistics support system which would guarantee an average of 200 flying hours per year for each aircraft. The Determination to Contract foresaw an overall spend of €262.5m, spread over five budget cycles.

The contract was agreed on December 23, 2019, but included a reduction in the number of aircraft to be modernised to just one, while the other 18 featured as an option, this, however, was never exercised. On March 10,

One of the flight lines of the Italian Armed Forces P180 fleet on the apron of the 14° Stormo in base at Pratica di Mare. In the foreground MM62337 is the fourth Evo+ produced for the Italian Air Force

The Piaggio VC-180C MM62336/'14-51', the first completed in the new grey colour scheme, taken near the coast of Terracina, in southern Lazio
All photos, author

2022, following a new requirement published by the AM, a new request for proposals was issued (an additional one) which referred to the contract of 2019, arranged the acquisition of a further six new P.180 Evo+ and the reduction of the aircraft to be modernised by six.

Initially, 12 aircraft were to be assigned to the Air Force, and three to the Army. A subsequent amendment, signed on November 27, 2024, also included three examples of the Evo+ for the Navy and two for the Carabinieri, reducing the number of machines to be retrofitted by five.

The outcome of this complicated process is that the Italian defence will receive a total of 20 new-build examples of the P.180 Evo+ variant (designated VC-180C, with the flight check aircraft - Radiomisure – being the EC-180C), plus eight of the original VC-180As will be modernised to Avanti II+ standard (designated VC-180B).

The first aircraft to undergo the modernisation process was MM62201, which consequently serves as the head of series for the Avanti II+ version, and while with Piaggio was flown with the temporary civil registration I-PDVT. This aircraft, on completion of the essential trials and checks, was delivered to the AM on November 25, 2023, and was reassigned to the 71° Gruppo of the 14° Stormo.

The second example of the new Evo+ model, operated by the manufacturer with temporary civil registration I-PDVO, MM62335, was the first new aircraft and the first to fly. Subsequently, two aircraft, MM62335 and MM62336 were accepted by SATA on July 31, 2024, arriving at the 14° Stormo on August 7.

The first two production aircraft (MM62334 and 62335) were completed in the traditional AM personnel transport colour scheme, white with blue fillets, while subsequent aircraft have been delivered in an overall grey camouflage, similar to the scheme introduced on the Navy aircraft some years ago.

The management of the P180 fleet by the AM has not changed; 14° Stormo is in charge of all the aircraft, with eight being prioritised for use by SATA. At the time of writing, the new Evo+ (four of which had been delivered by the start of May) have been utilised directly by the SATA, which in June 2025 initiated the first training course to utilise the new aircraft.

A VC-180A of the CAE-MC landing at Kalamata air base, Greece, in April 2022, during a mission of the cross-country training phase

A technical description

From a technical point of view, the new VC-180Cs feature significant differences in comparison to the preceding versions. Primarily, the avionics suite is constituted by the Collins Pro Line 21 system, which is characterised by the presence of three 10x8in (25.4x20.3cm) multi-function LCD screens, a Flight Management System (FMS), a GPS system, a Flight Director and Flight Guidance System, a dual AHRS, dual VHF and single UHF radio systems (new Software Defined Radio) as well as other modernisations.

In addition, there is a package of modifications to the power units which delivers a significant reduction in noise, permitting the aircraft to operate from any civilian airport.

The EASA/FAA certificated improvement to the PT6A-66B engines also includes a FADEC (Full Authority Digital Engine Control), new Hartzell five-bladed 1,800rpm propellers, and new exhausts with a wider section and a shape optimised to reduce external noise without excessively penalising external noise and fuel consumption.

The main undercarriage has also been modified; as well as being strengthened, it has been fitted with new antiskid, braking and

A VC-180A assigned to the Scuola Addestramento Trasporti Aerei does a touch-and-go at Pratica di Mare. This aircraft still wears the old CAE-MC title on the fuselage

steering system, while the landing lights have been relocated from the nose undercarriage to the main.

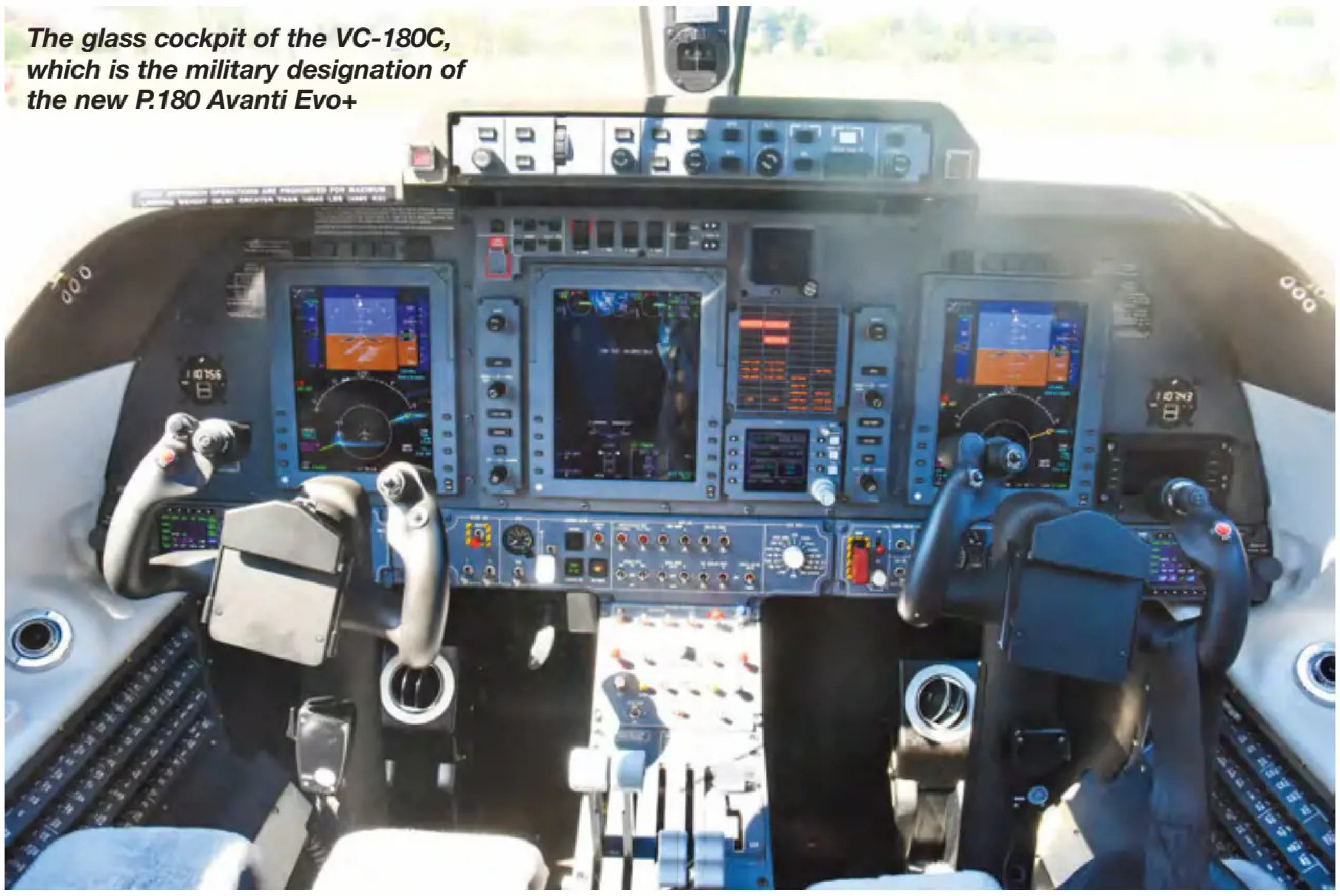
The Evo+ variant also has the option for a 400lb supplementary fuel tank to be installed in place of the cabin cupboard, which is usually utilised as a crew and passenger wardrobe. In this way it is possible to extend the endurance by around half an hour on long range flights. The Evo+ features a cabin entry door that has been widened by 20cm (7.87in) to facilitate access for a stretcher in urgent medical transport missions, and new lithium batteries. Finally, the wing has received winglets at the tips to improve fuel consumption. The updated Avanti II+ version shares with the Evo+ avionics, electric and general features.

To conclude, the simulator destined to support both the variants has architecture which is reconfigurable in terms of both software and hardware, enabling it to be suitable for future updating in parallel with the evolution of the aircraft.

School activity

The SATA is tasked to produce pilots for the multi-engine multi-crew aircraft of the AM, performing the so-called Phase 3 of the training, which is the specialised phase. Young pilots, after having completed Phase 2 in Italy (on the T-345A in Lecce, or abroad, at Sheppard AFB or Kalamata, Greece, flying the T-6A) are selected for three different channels: combat jets, multi engines and helicopters, where they can gain their military wings.

The SATA reports directly to the ItAF Comando delle Scuole (air education and training command) that is nearly at Wing level, headed by a Colonel, and organised with one Administration and Command Section, one Operations Section, one Gruppo Istruzione Professionale (GIP, or instructor pilot training squadron) and one flying squadron, the 204° Gruppo Volo, with two Squadriglie (flights): 415^ and 416^.

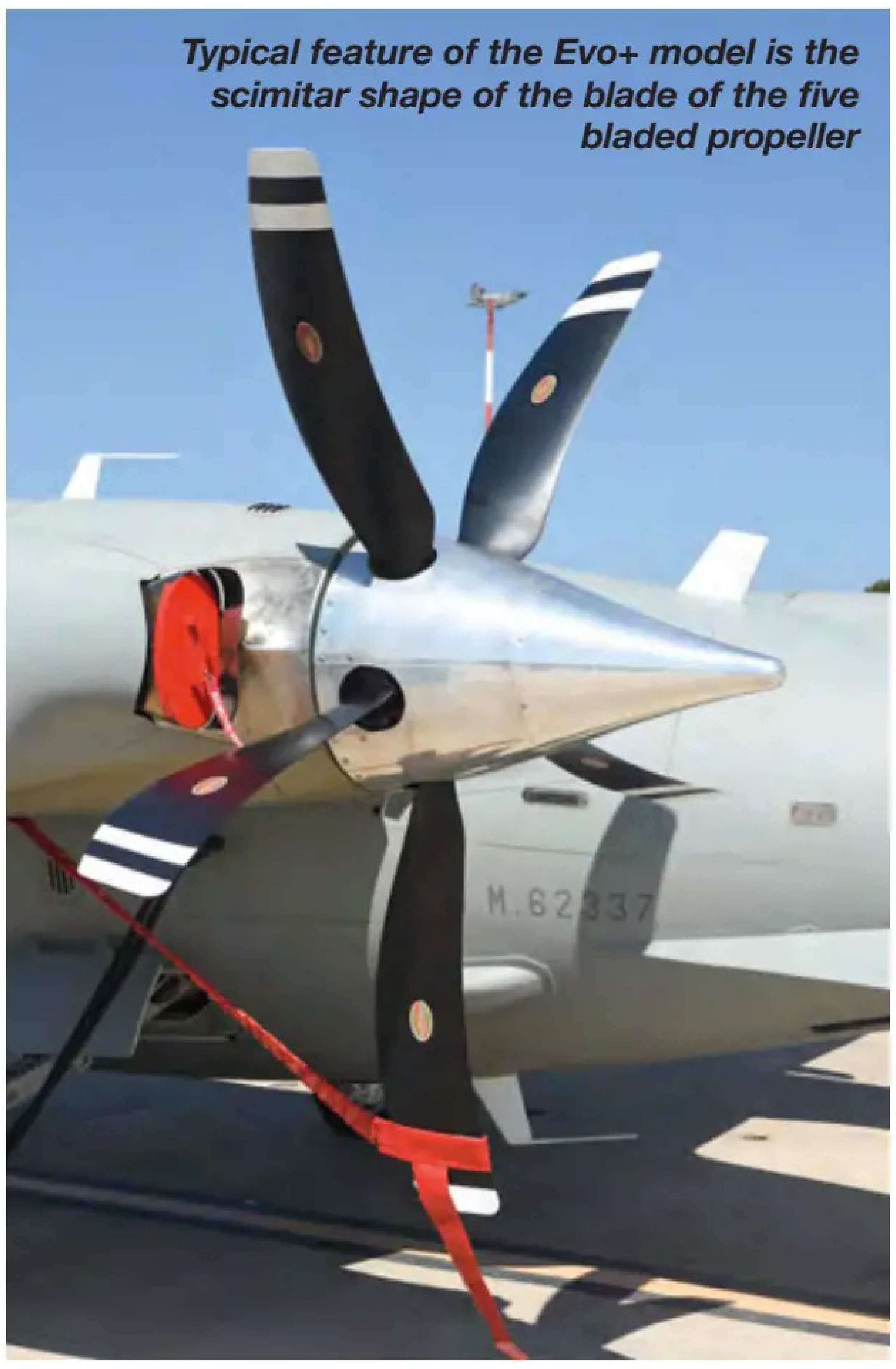


The glass cockpit of the VC-180C, which is the military designation of the new P.180 Avanti Evo+

The internal configuration of the VC-180C maintains the same layout as previous models, with seven seats for passengers

The cockpit of the VC-180C, dominated by the Collins Pro Line 21 avionic system

The SATA operates a flight simulator produced by Alsim, that is representative of a generic multi-engine jet aircraft


Typical feature of the Evo+ model is the scimitar shape of the blade of the five bladed propeller

A tight turn for this VC-180C showing off its futuristic look, and canards that provide positive lift. Rear-facing (pusher) propellers have been a feature of utility Piaggio aircraft since the legendary 1950/1960s era P166

Instructor pilots from the SATA on the ramp at Pratica di Mare. As usual, all are highly experienced pilots

The SATA trains pilots for the Italian Air Force as well as pilots of the Royal Saudi Air Force who are destined to fly multi-engine aircraft and study the same syllabus as the Italians. Other tasks include the formation of Multi-Crew Co-operation Instructors, Pilot Instructor Training, VC-180 Type rating, and courses for flight attendants, who will take care of the personnel in the transport aircraft, typically in the KC-767, the VIP and EMS aircraft of 31° Stormo (Falcon 900 and Gulfstream 650), and the VC-180.

The typical course of Phase 3, for pilots aiming to gain their military wings for the multi-engine fleets, lasts about seven months and includes 60 flying hours, plus 51 hours in the simulator. This equipment is provided by Alsim which is representative of a generic multi-engine jet aircraft. As mentioned earlier, SATA will receive a new simulator from Piaggio Aerospace, representative of both the VC-180B and the VC-180C versions.

Currently, SATA trains about 16 pilots per year, and in the future it's likely that students from other nations will be trained there.

The European Air Transport Fleet Management Committee began a study on a standard training program for multi-crew pilots in 2017, to improve interoperability. In 2021 the European Defence Agency (EDA) and its participating nations endorsed a European Undergraduate Military Transport Pilot Training (EUMTPT). The syllabus that won that prize was the one submitted by SATA. **afm**

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Air Legend 2025, Melun-Villaroche, France

A Tiger HAD attack helicopter from the 1st Escadrille of ALAT's 3rd Combat Helicopter Regiment at Phalsbourg lifts off from the static display at Melun-Villaroche. Alongside an H120B Colibri and an NH90-TTH, it also featured in the tactical flying displays. All images, author

Army Aviation fill the gaps

Babak Taghvaee visited Melun-Villaroche Airport near Paris hosted on September 6–7, 2025, to witness the seventh edition of the Air Legend airshow.

Once again 'Air Legend' drew tens of thousands of spectators to one of Europe's most dynamic annual airshows. While the event has become synonymous with spectacular displays of World War II fighters and classic jets, the 2025 edition gave unusual prominence to modern French military aviation.

Visitors witnessed tactical demonstrations and static presentations that highlighted the French Army Light Aviation (ALAT), the French Air and Space Force (FASF), and the French Navy, demonstrating the full breadth of contemporary rotary- and fixed-wing capabilities alongside historic icons.

ALAT in the spotlight

The largest presence among modern forces was provided by ALAT, whose helicopters and liaison aircraft formed a major attraction throughout the weekend. From its home base at Phalsbourg, the 1st Escadrille of the 3rd Combat Helicopter Regiment deployed two of its key battlefield assets: the NH90-TTH Caïman utility helicopter and the Tiger HAD attack helicopter. Both performed spirited display flights, showcasing

One of the highlights of Air Legend 2025 was the formation flight of a French Navy Falcon 10 MER with two retired jets: a CM-175 Zephyr training aircraft and an MS-760 Paris liaison jet.

Pilatus PC-6/B2-H4, serial no 887/'MCA' of the French ALAT supported the GIGN (National Gendarmerie Intervention Group) parachutists during Air Legend 2025, underlining the type's continuing value in utility and insertion roles.

the agility, maneuverability, and tactical mission profiles that define modern ALAT rotary-wing operations.

The NH90-TTH, a twin-engine, medium-lift platform central to France's battlefield mobility, impressed audiences with steep approaches, tight turns, and rapid transitions between hover and forward flight. Its display underlined why the Caïman has become the backbone of French tactical transport, combining troop lift with advanced avionics and survivability systems. Complementing it, the Tiger HAD illustrated its offensive edge. Demonstrating strafing passes, pedal turns, and aggressive climb-outs, the attack helicopter highlighted the air support role that ALAT continues to refine through training and deployments.

Joining these high-profile types was a SA-342L1 Gazelle from the 3rd Escadrille of the 3rd Combat Helicopter Regiment. Once the workhorse of ALAT reconnaissance, the Gazelle is today a legacy platform, but its appearance reminded spectators of the light helicopter's continued service in observation and anti-tank roles. Its smaller frame and nimble handling contrasted sharply with the larger Caïman and Tiger, underscoring ALAT's layered approach to rotary-wing operations.

Two Airbus H120B Colibri light training helicopters added another dimension to ALAT's presence. One flew a display sequence, showing the type's responsiveness and flight training role for the next generation of ALAT pilots, while the second was on static display, allowing the public to examine it up close. Although modest in appearance compared to combat aircraft, the H120Bs represent the essential foundation of France's rotary-wing pilot training pipeline.

ALAT also ensured that fixed-wing aviation was not overlooked. A Pilatus PC-6/B2-H4 short take-off and landing utility aircraft, coded 'MCA', supported the French Gendarmerie's parachute team during the opening sequence, emphasizing its ongoing value for insertion and liaison missions. Alongside it, a TBM-700 liaison aircraft illustrated ALAT's use of fast turboprops for communications and transport duties. Together, these aircraft reflected how ALAT integrates both fixed- and rotary-wing assets in a cohesive force structure.

Air and Space Force contributions

The FASF participated with two of its frontline platforms, both of which delivered impeccable performances over Melun-Villaroche. The Airbus A400M Atlas was flown by the service's Tactical Display Team, delivering a crowd-pleasing demonstration that balanced raw power with unexpected agility. Spectators watched as the large transport executed steep climbs, tight turns, and tactical descents, illustrating its ability to insert forces into short, unimproved strips while maintaining strategic lift capability but more importantly, the aircraft performed formation flight with two C-47 Skytrain transport aircraft. The A400M's role in both national and multinational operations has only grown in recent years, and its display underlined why it is regarded as Europe's most versatile military airlifter.

On the fast jet side, a Dassault Mirage 2000-5F from Groupe de Chasse 1/2 (Fighter Group 1/2,) 'Cigognes' at Base Aérienne 116, Luxeuil-Saint-Sauveur made a welcome appearance. The delta-wing interceptor (65/'2-MG') performed a series of high-speed passes and turns that demonstrated the enduring qualities of the Mirage 2000 family. While the Rafale Solo Display team had its aircraft on deployment at Tanagra for Athens Flying Week, the Mirage 2000-5F filled the gap.

French Navy Falcon 10 MER

If the A400M brought spectacle and the Mirage 2000-5F added speed, the French Navy Falcon 10MER contributed heritage and poignancy. Operated by 57S Escadrille at Landivisiau since 1981, the twinjet has long served in the training, liaison, and calibration roles for the Aéronavale. Modernized in the mid-2000s, the Falcon 10MER fleet (32, 101, 129, 133, 143 and 185) is approaching retirement, with the Pilatus PC-24 designated as its successor from 2026.

At Air Legend, one of these aircraft, 101, delivered a graceful flypast that resonated far beyond its modest size. What made the display remarkable was the formation it led: flying alongside the Falcon were two vintage jets once flown by the French Navy — the Morane-Saulnier MS-760 Paris (F-AZLT) and the CM-175 Zephyr (F-AZPF). Both are now maintained by the association Les Cocardes Marines. Their joint formation with the Falcon 10 MER symbolized continuity across decades of French naval aviation, linking the present fleet with its postwar training lineage.

For many observers, this was among the most memorable sequences of the weekend, precisely because it bridged the event's dual identities — a warbird showcase and a platform for today's forces. The Falcon 10 MER's farewell flight in such company was also a reminder of the service transitions underway across the French armed forces.

While Air Legend retains its reputation as a celebration of warbirds and classic jets, the 2025 edition saw relatively lesser participation of modern aircraft and helicopters due to the involvement of the FASF's display teams in airshows overseas. Despite that, the strong presence of ALAT, with its Tiger HAD, NH90-TTH, Gazelle, Colibris, PC-6, and TBM-700, emphasized the Army's rotary- and fixed-wing diversity. Their displays together with modern aircraft of the FASF and Navy ensured that amid the roar of Mustangs and the growl of Messerschmitt replicas, the audience at Melun-Villaroche saw not only the heritage of airpower but also its living present. **afm**

Airbus A400M Atlas (0033/F-RBAI) of the FASF's A400M Tactical Display Team was flown to Melun-Villaroche to perform in the flying display. It was the sole French Air and Space Force aircraft based on site for this year's event.

Slovakian Air Force F-16 Block 70, no 1005 climbs out to altitude as the finale to its very lively display on the Sunday of the show

Slovakia's F-16 makes public display debut

Tim Beach reports from the newly created Slovak International Aviation Days, which took place at Prešov Air Base, Slovakia

The Slovak International Air First (SIAF), previously an established annual event, has not taken place since 2023 apparently due to a fall out between the organisers and the Slovak Republic's Ministry of Defence.

This 'new' show, held at the Slovakian Air Force helicopter base at Prešov on September 6-7, was established at relatively short notice by a different organisation team Slovak International Aviation Days (SIAD), that appears to have involved Aeroklub Košice based at nearby Košice airport. Interestingly, and at least slightly controversially, the annual Košice Airport Open Day was scheduled for the same weekend. This meant there were two competing air display events within about 20 miles of each other.

F-16 appears

The advertising for SIAD claimed the first public display by the new Lockheed-Martin F-16 Block 70 of the Slovakian Air Force as its main attraction. However, there have already been several abortive attempts to 'show off' the new type. An example was the Piešťany Air Festival back in June where it had been expected to take part in both the opening flypast and perform a solo display on both show days. That did not happen and without any explanation. So, on the first day of SIAD with the F-16 again failing to take part as expected in the opening flypast, fears developed there was again going to be another disappointing 'no show'.

We need not have feared! Late in the afternoon with low cloud present, F-16 Block 70, no 1005 arrived on-time to take up its display slot. Due to the conditions, it performed an impressive and powerful flat display culminating in a curved dedication pass from behind the crowd. Better weather prevailed on the Sunday, so a more varied and dynamic routine was flown to include banking turns and loops with a full afterburner climb to altitude to conclude the display. The display on both days was performed by the same example and was surprisingly slick and vigorous considering the display work up is very recent. It was noticeable that the power of the Block 70's General Electric F110-GE-129 engine sounded different, with a deeper tone. Also, the coloured red and green navigation lights on the jet were very prominent, especially during the less-than-ideal weather during the Saturday show.

The star foreign display item was this Eurocopter EC655 Tigre 'ET721' from the Spanish Army

One of the two recently acquired Bombardier Global 5000s that will replace five Let L-410s as part of the modernisation of the Slovakian Air Force's transport fleet

Unsurprisingly, most of the military display acts were provided by the host nation. These included a very impressive paradrop from the Air Force's only two Alenia C-27J Spartans, with approximately 90 parachutists receiving a great ovation from the large crowd.

An opening flypast consisted of two Sikorsky UH-60M Blackhawks, plus single examples of a Mil Mi-17M, C-27J, L-39 Albatros and only on the Sunday, F-16 '1004'. Other performances from the 'home team' included a display from a C-27J, Mi-17 and various impressive operational demonstrations by UH-60M Blackhawks. A surprise late addition to the program was the inclusion of one of the recently acquired Bombardier Global 5000s that performed a series of well executed flybys in various configurations.

Spanish stars

Foreign military participation was quality rather than quantity. A Czech Air Force UH-1Y Venom flew in for static display. However, the attraction was provided by the Spanish Army which provided a Eurocopter EC655 Tigre attack helicopter as a very rare flying participant outside of Spain, plus a supporting NH-90 for static display. A Hungarian Gripen had been scheduled for the flying display but cancelled due to weather/transit related operational issues.

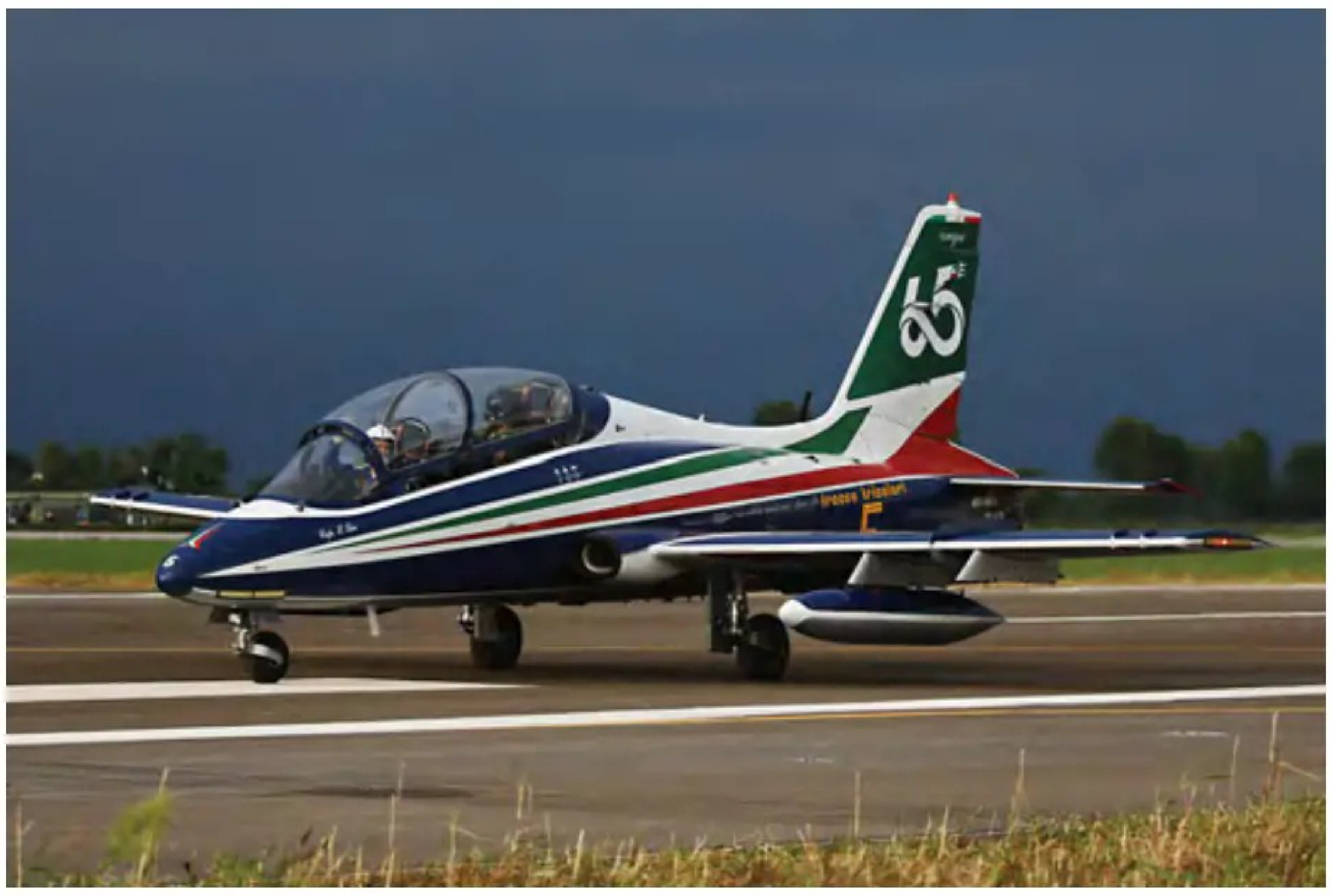
The organisers of SIAD deserve credit for arranging a new event at this military venue, especially as it was free to attend and drew a large attendance on both days. The show was very well organised and proceeded with few hitches. Hopefully, it will be repeated in the future, especially as SIAF has now failed to deliver in both 2024 and 2025. **afm**

The dwindling fleet of these old workhorses was represented by Mil Mi-17M '0846' with its 'Bambi Bucket' firefighting demonstration

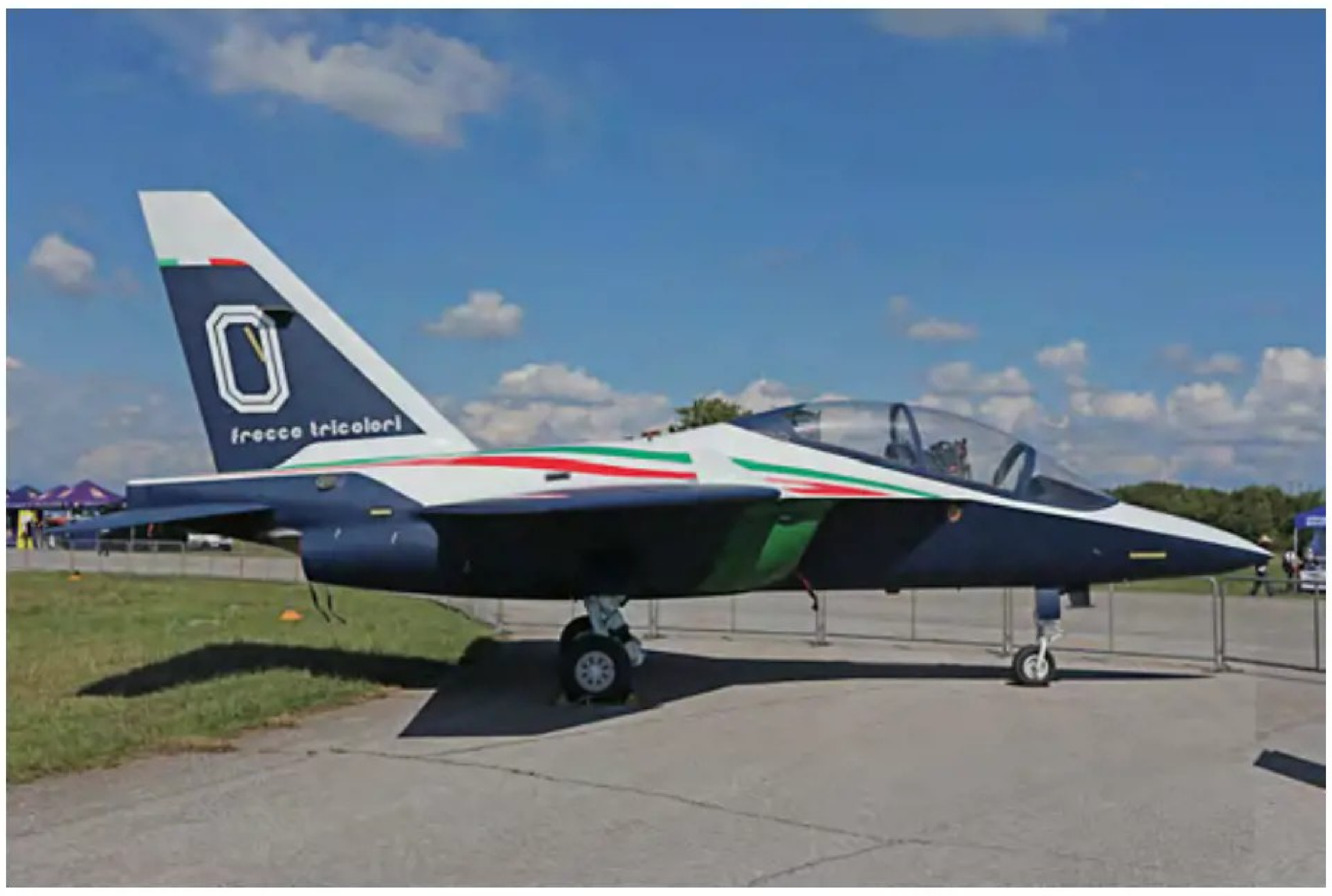
With a storm looming, the Frecce Tricolori's nine MB 339PANs make a pass over Rivolto AB on September 5. Their tails painted in Italy's flag, green, white and red indicate their position in the formation and the matching smoke colours

Celebrating 65 years

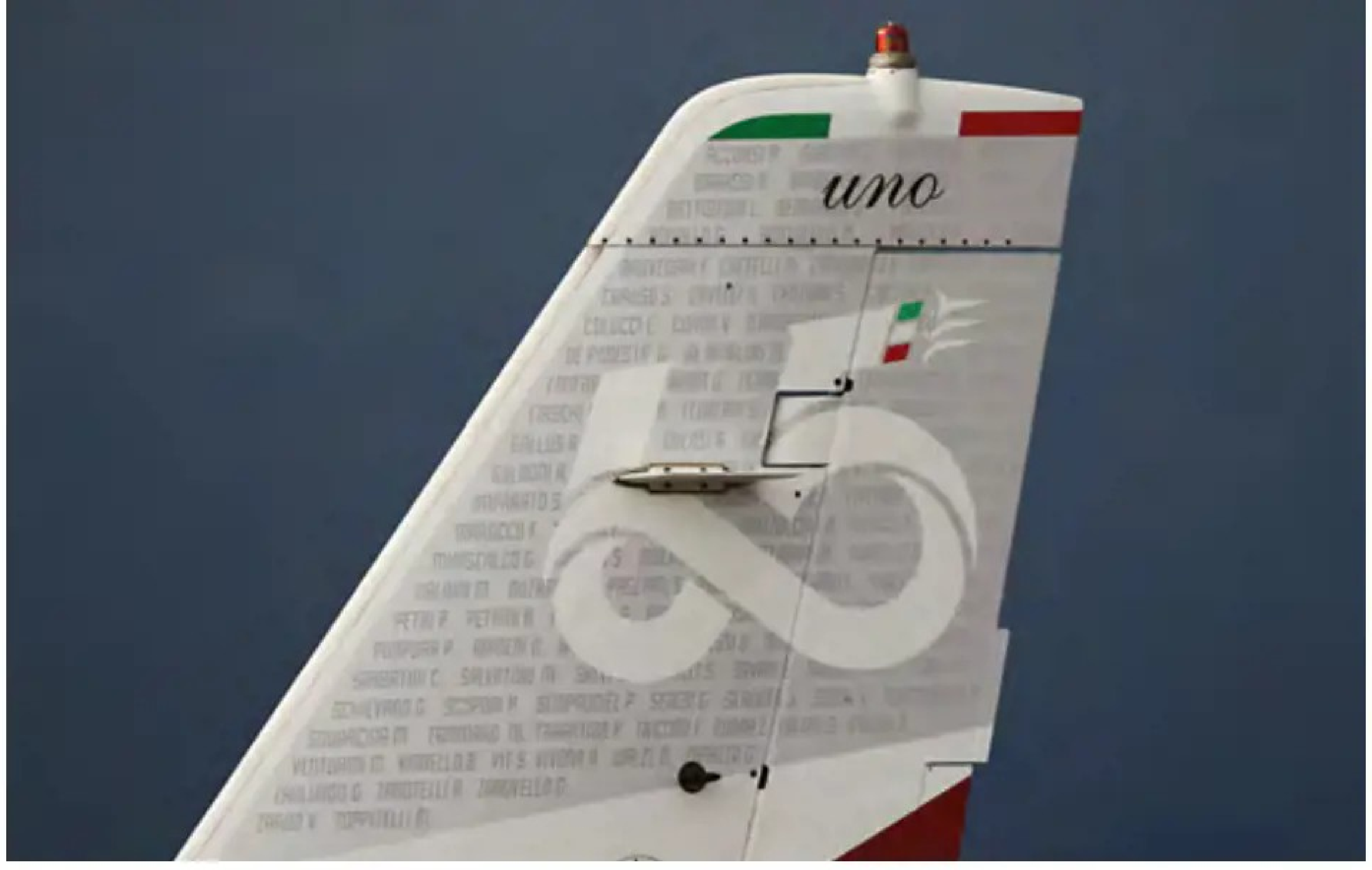
Many foreign aerobatic teams gather every five years at Rivolto Air Base (AB) to celebrate the Italian Air Force Frecce Tricolori's birthday. **Marco Rossi** was there during September 5/6 to witness the 65th anniversary event



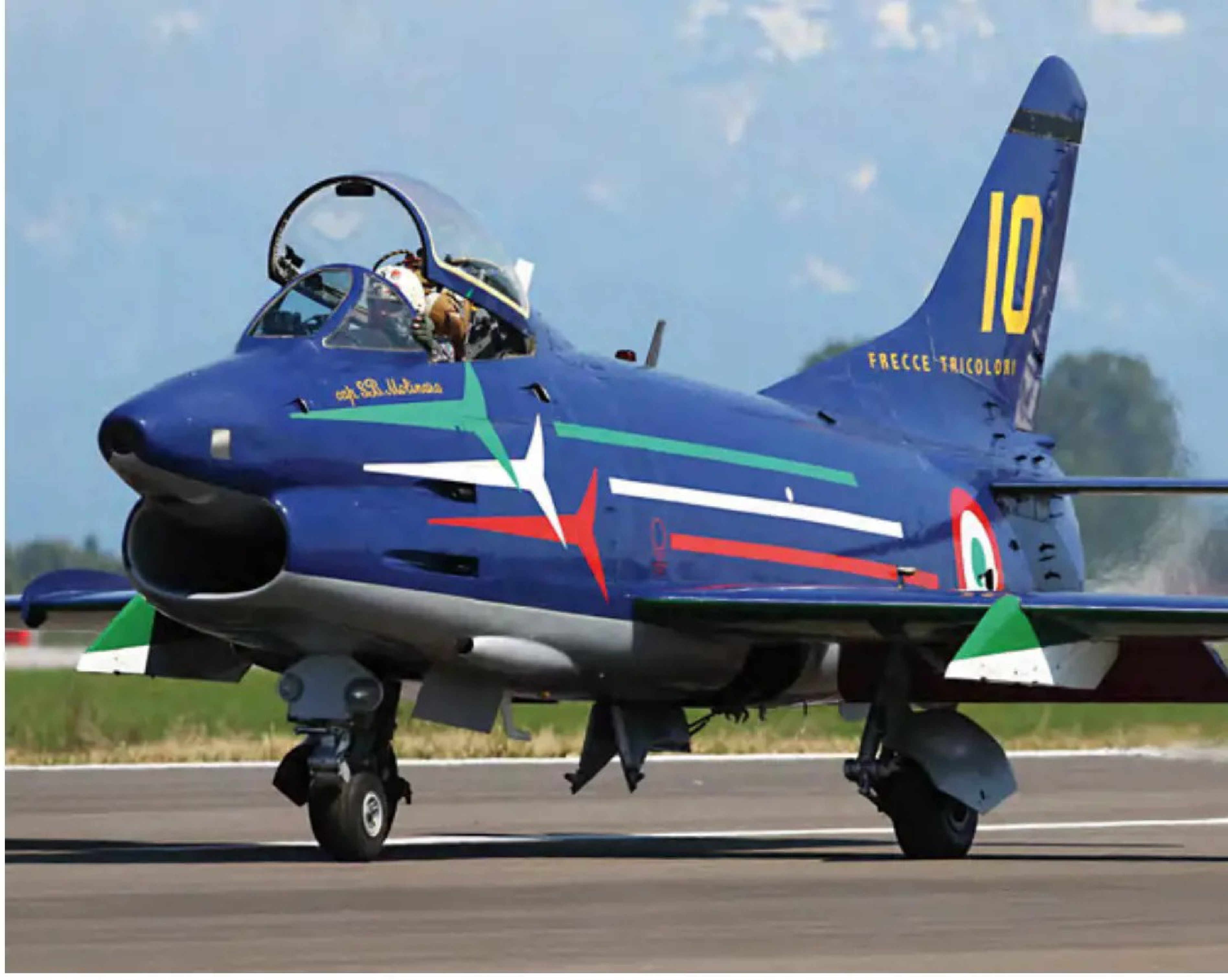
To celebrate the 65th anniversary, Frecce Tricolori this year wore a special livery: the spine of the aircraft is in white to the front of canopy, inspired by the livery of the future T-346, which will replace the MB.339PAN starting from 2028



Frecce Tricolori colours of the future worn on a T-346 full scale replica. The scheme was designed by world-renowned car company Pininfarina and unveiled at Istrana Air Base on September 12, 2024, following the Frecce Tricolori's return from its North American tour

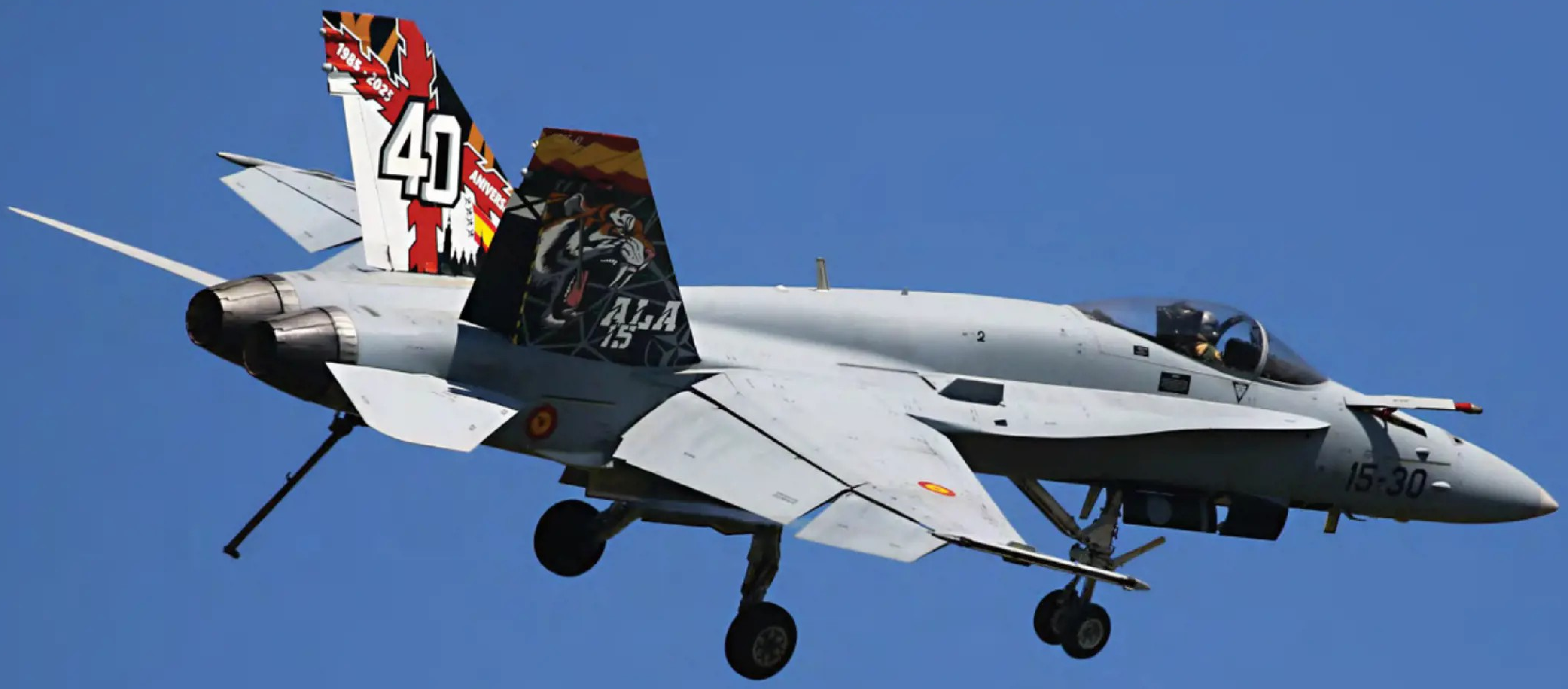


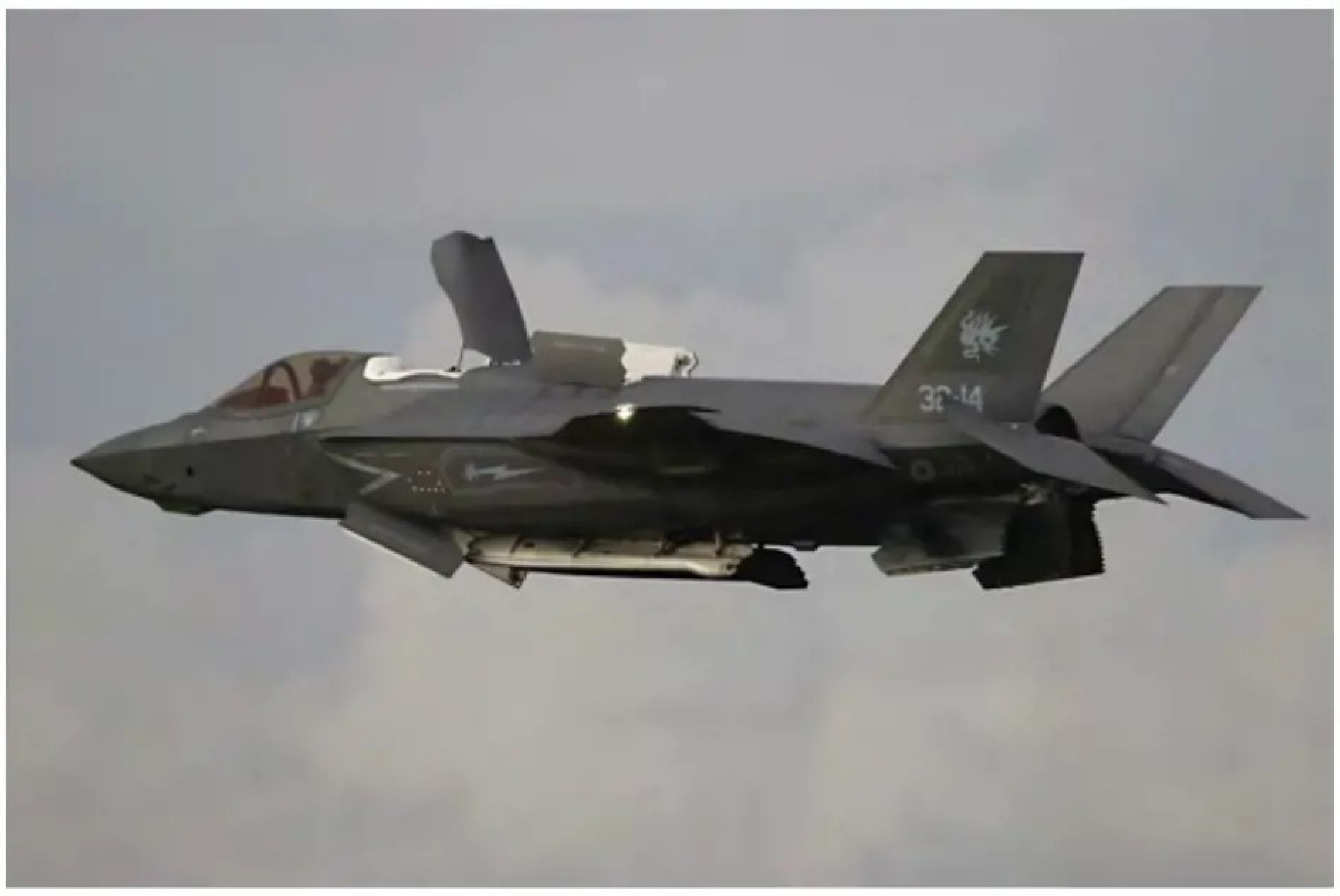
Above: **The names of all pilots to serve in the team since 1961 are painted on all nine aircraft**



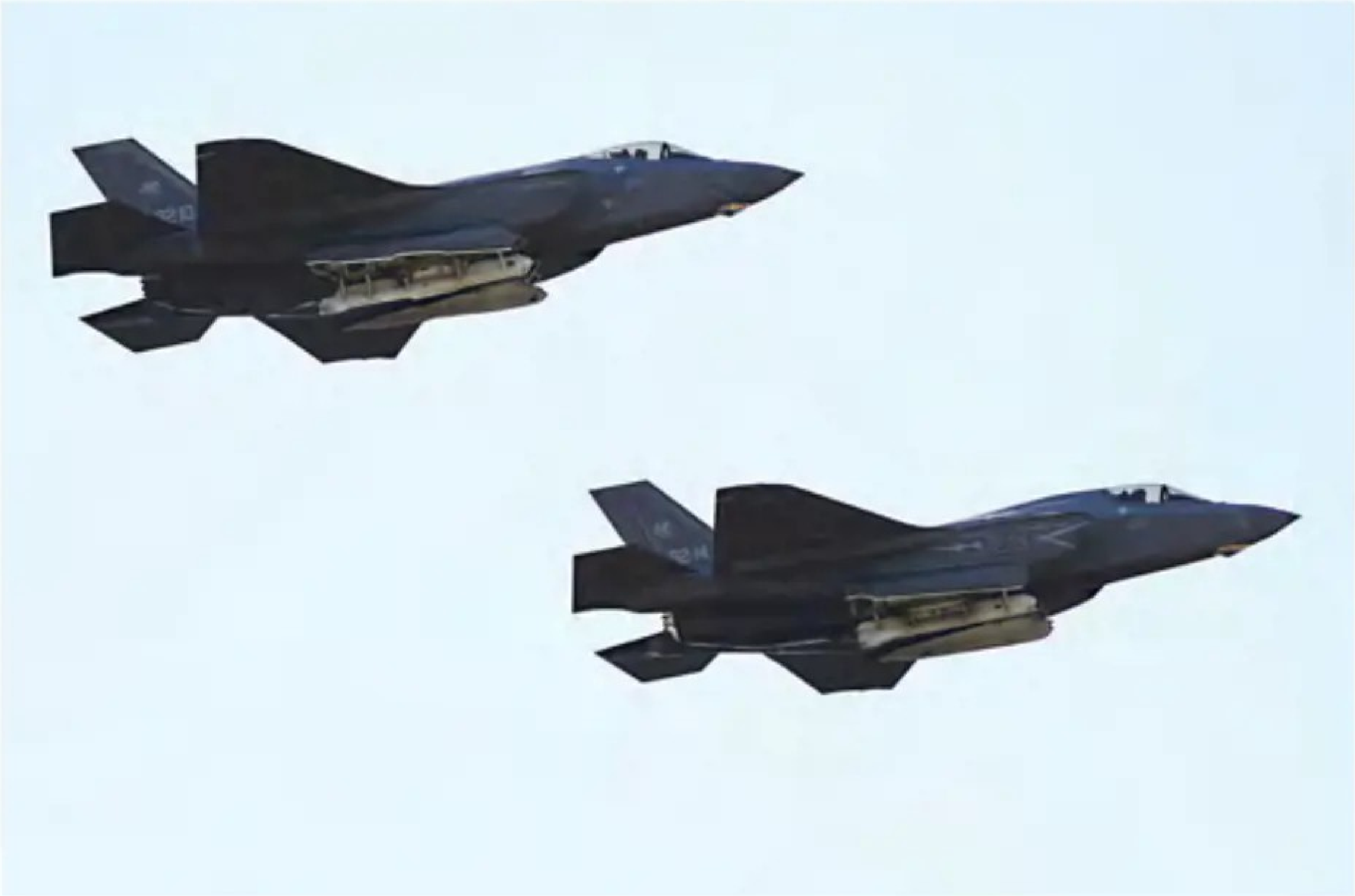
Right: **The iconic Fiat G.91PAN MM6305 (c/n 169) wearing the civilian marking I-AMIC took to the air again in the summer of 2023, following a great restoration effort. It coincided with the Italian Air Force's centennial air show held at Pratica di Mare AB on June 16-17, 2023. This much-loved aircraft equipped the Italian aerobatic team from 1964 to 1981, when it was replaced by the current Aermacchi MB.339PAN**

The Spanish Air Force's Patrulla Aguila ceased flying the venerable CASA C-101AB in June 2025, while it transitions to the Pilatus PC-21. But the Spanish still sent EF-18M C15-43/'15-30' from Ala15 based at Zaragoza AB, piloted by Capt Cava performing an appreciated and spirited display





Lockheed Martin F-35B MM7453/'32-14'from 32° Stormo/101° Gruppo based at Amendola AB was undoubtedly one the highlights of the show



Flying from Aviano, F-35B MM7453/'32-14' was joined by F-35A MM7360/'32-10'. Differences between the two variants can be appreciated here

NATO solidarity

Alan Warnes travelled to Ostrava in the Czech Republic to witness the impressive NATO Air Days event on September 20/21 that saw 15 NATO air forces in attendance

Last year thousands were left disappointed when the annual airshow at Ostrava-Leos Janacek airport was cancelled. Torrential rain and flooding the previous week put paid to those plans. This year, the event saw wall-to-wall sunshine, from the first arrivals and rehearsals day on Thursday 18 to Sunday 21. Unfortunately, for those of us staying for departures on the Monday, the weather broke, but it was interesting to watch most visitors 'buzzing' the air traffic control tower on leaving.

NATO Air Days is supported by NATO, and 15 NATO air forces attended the event as well as Austria. They comprised Belgium, Canada, Croatia, Czechia, France, Germany, Greece, Italy, Lithuania, Portugal, Slovakia, Slovenia, Turkey, UK and USA. Industry also had a big presence, which is not surprising given that the Czech military is going through an era of modernisation.

Among the companies present was Israel's Rafael Advanced Defence Systems marketing its SPYDER surface-based air defence (SBAD) system that the CzAF has acquired, The SPYDER system will replace the Czech Air Force's elderly SA-6 (NATO designation 2K12 Kub) and there was one on show. They are being

It's great to have operational AH-1s back in Europe. It's still a Cobra really!

A Czech Air Force UH-1Y Venom with two mounted 7.62mm gun pods is escorted by an AH-1Z Viper which can be seen just behind *All photos, author unless stated*

This B-52H, 61-0014 wearing the marks of the 49th Tactical Evaluation Squadron based at Barksdale AFB, Louisiana, made three low passes at the event. This was one of two that deployed to RAF Fairford, UK, on September 12 *Tim Beech*

A German Army NH90TTH spits out flares during its ten-minute routine. It was the only participant to do so. Given the dry conditions, it was probably wise!

based in Strakonice, home to the 25th Protiletadovly Reaketovy Pluk (Anti-aircraft Rocket Regiment) 'Tobrucky', about 70 miles (110 km) south-west of Prague.

OMNIPOL headed up the likes of Aero Vodochody, era (radar specialists) and LET Aircraft Industries under the banner 'Together Beyond Limits'. Bell was there too, supporting the AH-1Z Viper and UH-1Y Venom sale to CzAF,as were Lockheed Martin, promoting the CzAF's F-35A purchase, Embraer fronting the C-390 Millenium sale to CzAF, and UAC (Ukraine and Czech Company) showing their three drones, Stork LR, Stork 1000 and Mace kamikaze drone being used in Ukraine War. Production of the unmanned aerial systems is split between Prague and Dnipro.

Czech presence

The event also featured the 16th Czech Air Forces Day so there was plenty for the public to see from their local air force.

Saturday, the busiest day, included several press briefs and the appearance of the Czech President, Petr Pavel, a retired army general who supports Ukraine and Czech aerospace industries. The president is adored in Czechia and crowds of spectators wanted 'selfies' with him.

After opening the airshow on Saturday morning, Pavel visited the OMNIPOL static area, where he spoke privately and at length in front of CLV's new L-39NG Skyfox. The conversation included the general manager of LOM Praha state enterprise, Jiri Protiva, LOM Praha's CLV (Flight

President Petr Pavel is popular in Czechia. Being an ex-General in the Czech Army, he's a great believer in defence and the local aerospace industry. He's also good at interacting with people as we saw at NATO Air Days

NATO Air Days 2025, Ostrava, Czech Republic

Training Centre) Director Jaroslav Spacek and Aero Vodochody Chairman and CEO, Viktor Sotona. He then headed to the LET 410NG to look inside and receive a brief on the new aircraft, a more powerful version of the original aircraft.

Parked in between the two OMNIPOL aircraft was a brand new Zlin 242L trainer which made its first flight two days earlier. Pardubice-based CLV has six of these light training aircraft on order, along with two Zlin 143s. The latter and this first Zlin 242L will be delivered shortly, and the five outstanding Zlin 242Ls will join them in 2026. They will replace CLV's six Zlin 142CAFs.

It was announced at the Future Air Forces Conference in Prague on September 17 that CLV's Pardubice site had been selected by NATO Flying Training in Europe (NFTE) as a venue for Phase 3 basic jet training flying. NFTE is trying to bolster NATO flying training by selecting sites that can offer facilities with excess training capacity.

CLV was also exhibiting one of the four L-39NG Skyfox delivered this year, the one on show among the batch of two that arrived at Pardubice in February.

Back at the OMNIPOL chalet on September 19, the Aero CEO, Viktor Sotana and LOM Praha Director Jiri Protava signed an agreement to turn the four Skyfoxes on option into a firm order. Two will be delivered this year and two in 2026. Meanwhile, the new and improved LET 410NG has not been ordered by the CzAF, but according to several military and OMNIPOL personnel, 'it's likely to happen soon'. Both CLV and the Czech Air Force operate a small number of LET 410-UVPs, for both training at Pardubice and in the transport role at Kbely, where a very smart looking VIP example is based.

The Czech Air Force ordered two Embraer C-390s on October 17, 2023, with deliveries expected in the first quarter of 2026, so it was no surprise to see a Portuguese Air Force example in the static display. While, making its debut at NATO Air Days, was an A330MRTT of NATO's Multinational MRTT Unit (MMU), which the CzAF joined in 2019. With its refuelling boom lowered, passers-by could see for themselves how the Czech Air Force Gripen C/Ds take on fuel while airborne (see Czech Gripens Iceland Bound, August, p42-43). With C-390s on order, with an air-to-air refuelling (AAR) capability the CzAF could have a capable AAR fleet one day, after many frustrating years of Gripen pilots struggling to get AAR qualified. There was also a CzAF Gripen in static, one of three at the show – the example in the static was a dual seat D version, the other two were Gripen Cs; one flew in flying display and another was a reserve. They will be replaced by the Lockheed Martin F-35A, but for about three years both will fly together until the F-35A reaches IOC in 2035.

The 'Turkish Stars' with their veteran Northrop F-5s, won the Best Display Team award, beating off competition like the RAF Red Arrows

Further down the static was an L-159 Advanced Light Combat Aircraft (ALCA) serial no 6064, of 212 Tactical Sqn (Taktcka Letka), with a specially marked tail to celebrate this year's 25 years of CzAF L-159 ops. In the same area was a 222 Helicopter Squadron (222 Vrtulnikova Letka, VL) special forces configured Mi-171Sh *Hip* helicopter, with a 7.62mm gun in a side-door and its clam-shell doors wide open.

For me the highlight of the CzAF presence, were the two AH-1Z Vipers and two UH-1Y Venoms that were making their debut at NATO Air Days. In 2018, Bell signed a contract with the CzAF for eight UH-1Y Venoms and four AH-1Z Vipers, that were delivered between 2021-23 to the 221 VL based at Namest nad Oslavou. The Czech government also announced in August 2022 that it would receive six more AH-1Zs and two more UH-1Ys through an Excess Defense Articles (EDA) agreement, however it's unclear how this is progressing. There was an example of both helicopters in the static display, and another pair were put through their paces during a spirited 'Attack on the front edge of defences' role demonstration.

The AH-1Z was effectively covering the UH-1Y which offloaded soldiers of the 7th

A Mi-171Sh Hip of the Czech Air Force's 222 Helicopter Squadron picks up troops after an 'ambush of the enemy position' ground demonstration

The Italian Navy Harrier was a favourite with onlookers. It is seen here hovering before it gave a bow and landed

Mechanized Brigade 'Dukelska' to 'carry out an attack on enemy positions, breaking through defensive lines and then demonstrating the treatment of a wounded soldier from combat'. The UH-1Y then picked them up with the AH-1Z again covering.

Also in the flying display was a CzAF Mi-171Sh *Hip* from the 222 VL that participated in the 'Ambush of the enemy position'. The action-packed display saw troops fast-roping from the transport helicopter, once the mission had been safely completed the *Hip* which had landed recovered the troops and departed. A L-39 Skyfox (prototype (7001/0475), flown by Aero test pilot Vladimir Tovarik, showed off its agility during a ten-minute slot on both days.

Earlier, the opening ceremony saw a flypast of CzAF assets led by a Mi-171Sh and AH-1Z/UH-1Y duo (from the show), a C295 flanked by two Gripen Cs that were the quick reaction alert (QRA) jets from Caslav fitted with live AIM-9M Sidewinders, followed by three L-159s.

The CzAF ground display included a Rafael SPYDER SBAD with its four-missile launcher mounted on an eight-wheel Czech-made TATRA truck. An interesting board displayed in front of it explained that the system can be armed with the I-Derby MR (Medium Range) , I-Derby LR (Long Range) and Python-5 MR. While an IAI/Elta EL/M 2084 Multi Mission Radar that detects the air threats for the SPYDER was at the end of the line of vehicles.

One of the longest queues of people wanting to view an aircraft was outside the full-scale replica Lockheed Martin F-35A; it seemed everyone was keen to look inside the cockpit of the stealth fighter the CzAF will receive in 2032. Lockheed Martin signed an agreement with Czech-based VR Group, on an industrial co-operation project that saw the official launch of efforts to create a new multi-domain concept center (MDCC). This will integrate sensors from air, space, sea and land assets into one recognised air picture, to support F-35 operations.

Immediately afterwards, Pratt & Whitney signed an agreement with PBS Group, headquartered in Prague, to develop a next-generation auxiliary power unit (APU) for commercial and military applications, such as fighters, rotorcraft, and business jets. This is projected to have the highest power density on the market, delivering maximum performance at a reduced form factor and weight, driving new capabilities for fixed-wing and helicopter platforms. Both projects, the US were keen to stress, were due to Czechia's partnership with them on the F-35A.

Foreign participation

There were around 25 aircraft in the static display. Foreign participants included two Mirage 2000-5s, a single-seat EGM and dual-seat BGM from the Hellenic Air Force, a Lithuanian Air Force LET 410-UVP, Slovakian Air Force L-39CM Albatros, believed to be the only operational example of nine on strength, Austrian Air Force S-70A, Lithuanian Air Force AS365N**+**, an Airbus EC135 operated by Munich-based HTM (Helicopter Travel Munich) used by the German Navy's MFG-5 for helicopter pilot training, the Italian contingent, MMU A330MRTT, German Air Force A400M with inscription '10 Jahres of A40M', German Air Force KC-130J Hercules, Canadian Air Force CF-188A Hornet, Canadian Air Force CC-130J Hercules, Slovakian Air force UH-60M Blackhawk, and Portuguese Air Force KC-390.

Italy, as partner nation for the event, had a large presence. The static included the specially marked Tornado of 6° Stormo wearing the '50 years of Tornado' colours with the insignia of the seven Tornado units. Parked alongside was a F-35A Lightning II, also of 6° Stormo, and a 46° Aerobrigata C-130J Hercules. The Italian Navy TAV-8B Harrier parked next to it was probably the star of the event.

This Zlin 242L only made its first flight two days before the show, and will be delivered to the LOM Praha's CLV facility shortly along with two Zlin 143s – hence the No 3 code

There was a large Italian showing in the flying display too, the Leonardo C-27J Spartans proved how agile the aircraft is for a transport aircraft, with several loops in its routine. A Leonardo T-346 Master advanced jet trainer, used by the International Flighting Training School at Deci, also participated, as did an Italian Air Force Typhoon, but it was the Italian Navy AV-8B which performed towards the end of each day that captured the crowd's imagination, particularly when it hovered and then bowed towards them. It brought back nice memories of the RAF Harrier display routines.

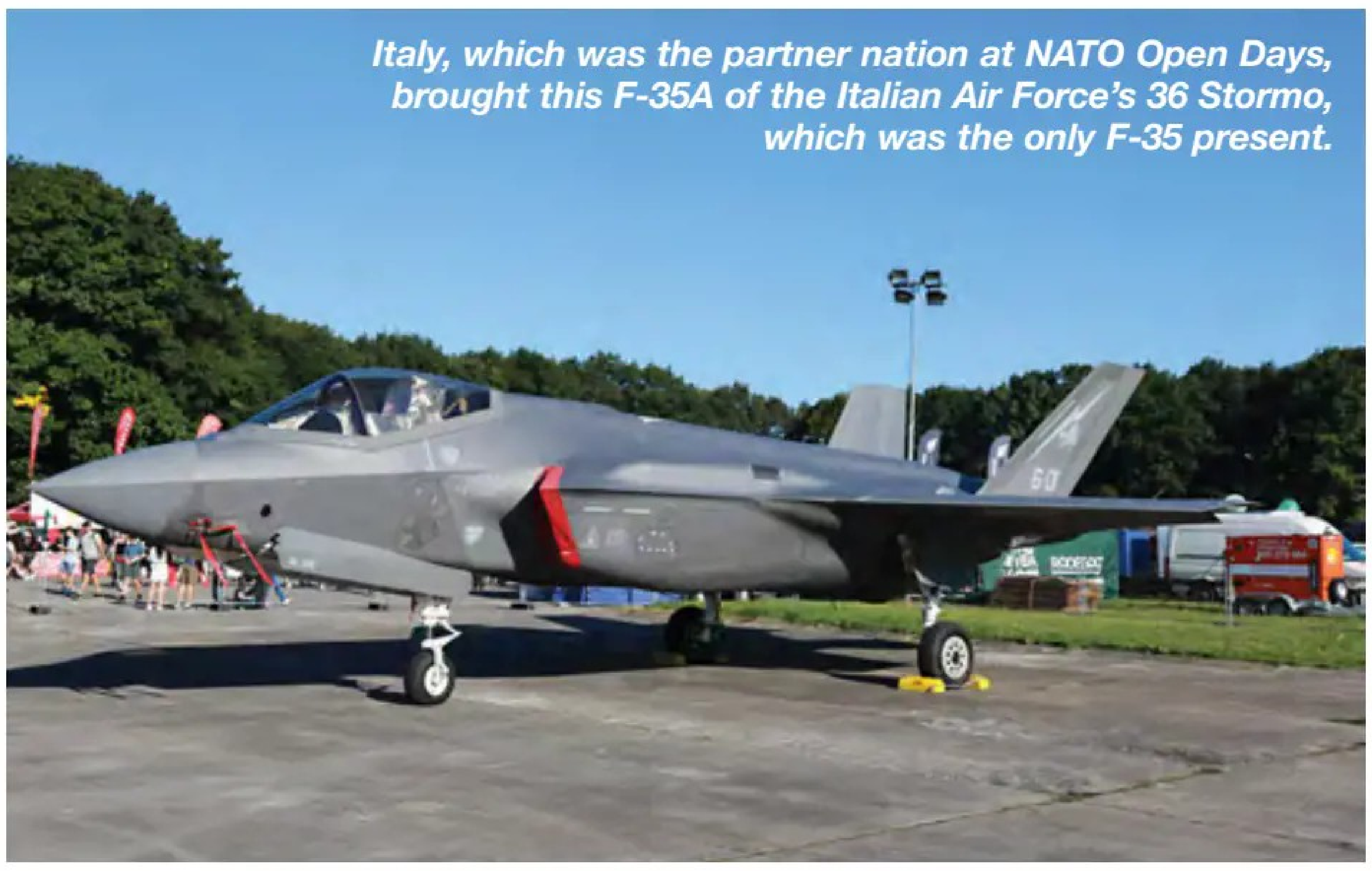
The flying display on both days started at 9am and continued until 6pm, with ground demonstrations that gave the punters a break from looking up at the sky. Undoubtedly, the star turn on the Saturday was the USAF Boeing B-52H which made three passes.

The international flavour comprised displays by a Slovakian UH-60M Blackhawk, Slovenian PC-9M Swift, German Army NH90TTH, German Army Tiger, German Air Force A400M Atlas, Slovakian F-16C making its international debut, Croatian Air Force 'Wings of Storm' PC-9 aerobatic team, RAF Red Arrows Hawk T-1s, Turkish Stars F-5 team, French Air and Space Force Rafale C and a German Air Force Eurofighter. I don't think I missed anything.

With the sun gradually swinging around in late morning, it was difficult to get decent images of the flying display. So, on the second day I took a 15-minute walk to a field, joining hundreds of other like-minded people, with many, judging from two flags planted in the field, being Polish.

The Turkish Air Force 'Turkish Stars' aerobatic team with their veteran Northrop F-5s, were judged by the NATO Air Days committee to have been the best aerobatic display team. The team with probably the oldest aircraft at Ostrava were a delight to watch and probably edged it.

The most surprising element of NATO Air Days for me was that despite the Czech Air Force acquiring F-35As, and the US and Czechia trying to foster closer military relations (as we were told at the US press conferences), there was no F-35 in the flying display. Actions, as they say, sometimes speak louder than words… **afm**



Italy, which was the partner nation at NATO Open Days, brought this F-35A of the Italian Air Force's 36 Stormo, which was the only F-35 present.

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Ice on undercarriage caused F-35A crash in Alaska

A USAF F-35A Lightning II, assigned to the 355th Fighter Squadron, prepares to receive fuel from a KC-135 Stratotanker, assigned to the 909th Air Refueling Squadron, during Northern Edge 2025 near Eielson AFB, Alaska, on August 22, 2025. Another of the unit's F-35As is the subject of the accompanying accident report *USAF/Airman 1st Class Spencer Hanson*

US AIR Force Pacific Air Forces has released the Accident Investigation Board report for the F-35A Lightning II accident in January 2025, at Eielson Air Force Base (AFB), Alaska (see *Attrition*, March 2025). The report, published on August 27, identified the aircraft as 19-5535/'AK' operated by the 355th Fighter Squadron (FS) and assigned to the 354th Fighter Wing (FW).

At approximately 12:49:16hrs local time, on January 28, the mishap aircraft (MA), tail number 19-5535, crashed after completing a touch-and-go landing to Runway 32. There were no fatalities. The mishap pilot (MP), assigned to the 354th FW, ejected safely before impact. He sustained minor, non-life-threatening injuries. The MA impacted near the west side of the Eielson AFB runway and was destroyed, with a total loss valued at $196,500,000. The MA debris was contained within the airfield boundaries.

A formation of four F-35s, callsign YETI, from the 355 FS were to fly as 'red air' (acting as adversary aircraft). This four-ship were in support of a formation of two F-35s, callsigns CHEVY 01 and CHEVY 02, for an Air Combat Manoeuvres (ACM) sortie. The mishap flight (MF) consisted of the flight lead, YETI 01, wingman, YETI 02, YETI 03 (MP), and YETI 04, mishap wingman (MW).

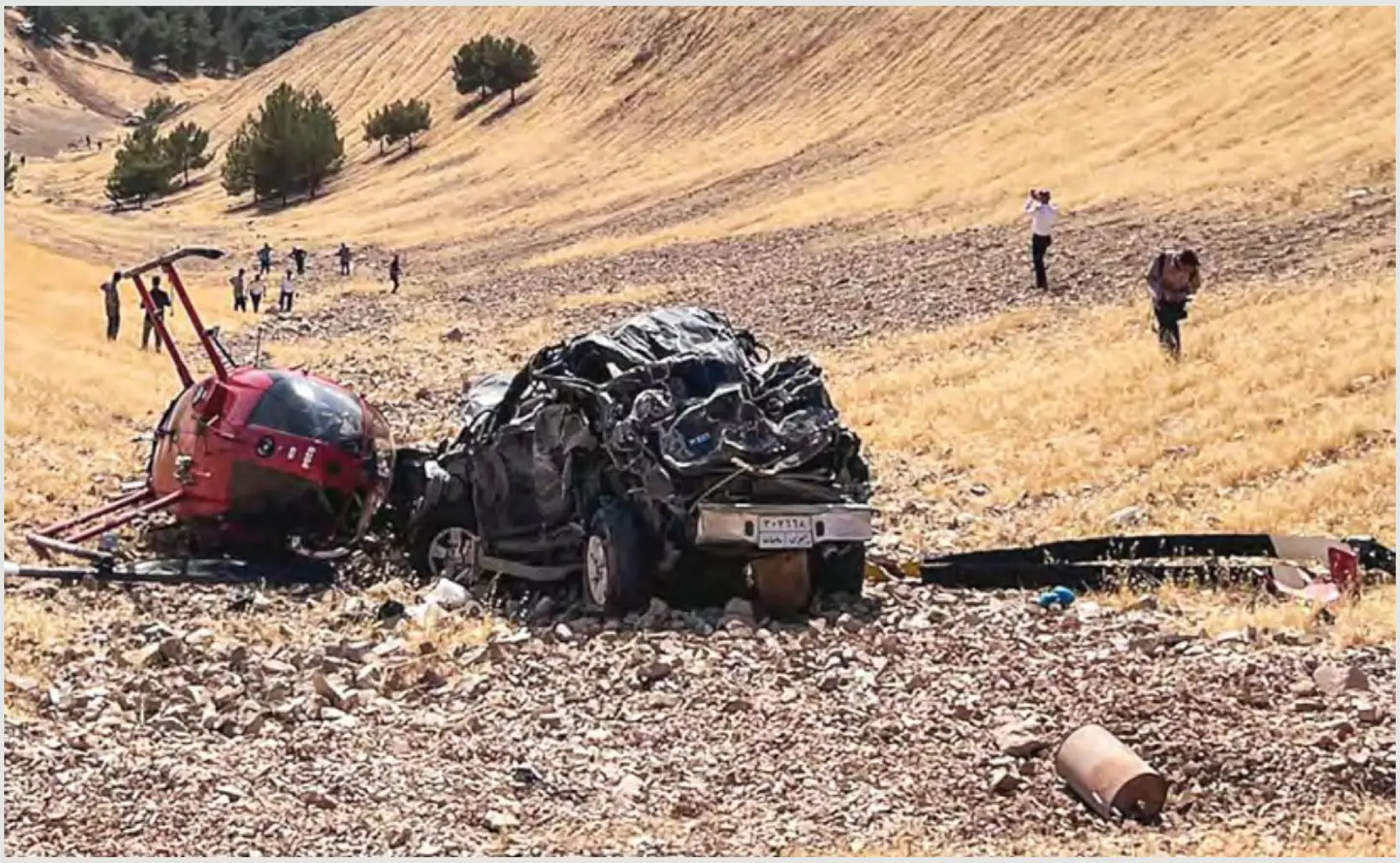
The MA was flying as the No 3 aircraft (YETI 03) in the flight of four F-35A aircraft. The MA lifted off runway 32 and the MP placed the landing gear handle up. At this point, about 40 minutes had elapsed between the MA exiting its climate-controlled weather shelter and being exposed to ambient conditions that hovered around 0°F (-17°C). After initial take-off at 1122hrs for a training sortie, the MA's nose landing gear (NLG) did not retract properly due to hydraulic fluid contaminated with water that froze, preventing full strut extension and resulting in the NLG being canted to the left. At 20:23:01Z, the MA was accelerating through 275kts calibrated airspeed (KCAS) at which point an 'OVERSPEED GEAR' caution annunciated inside the cockpit on the integrated caution and warning (ICAW) function access button.

It is common for the predictive OVERSPEED GEAR caution to assert on initial take-off in the F-35A. This is especially true in a cold temperature environment. The MP pulled back on the stick to pull the nose up and simultaneously reduced the throttle to not overspeed the in-transit landing gear

The mishap wingman (MW) observed the NLG door was ajar and notified the MP, who extended the landing gear, revealing the NLG wheel was turned about 17° to the left. After running initial checklists, the NLG was still turned approximately 17° to the left. The MP initiated a conference call with Lockheed Martin (LM) engineers through the on-duty supervisor of flying (SOF). The MA held for approximately 50 minutes while the team developed a plan of action.

Based on recommendations from the LM engineers, and with the concurrence of the SOF, the MP accomplished two touch-and-go landings, at 1218hrs and 1248hrs, attempting to recentre the NLG wheel. While both attempts failed to centre the NLG wheel, the right main landing gear (MLG) strut and then left MLG strut did not fully extend after take-off due to ice forming inside the strut. When the MA lifted off following the second touch-and-go, it did not transition to the appropriate airborne control law (CLAW); instead, the MA remained in the 'on-ground' CLAW based on erroneous indications from the weight-on-wheel (WoW) sensors. As all valid WoW sensors indicated the MA was on the ground, the MA transitioned to the 'on ground' flight control law (i.e., automated ground-operation mode, causing the MA to operate as though it was on the ground when flying). However, because it was actually airborne, the MA was uncontrollable. The pilot successfully ejected and emergency responders were at the scene within a minute.

The accident investigation board (AIB) president found, by a preponderance of the evidence, the cause of the mishap was hydraulic fluid contaminated by water that froze in the NLG and MLG struts. The ice prevented the struts from full extension that led the WoW sensors to declare the MA was on the ground when it was airborne. The AIB president found that crew decision making, including those on the conference call, lack of oversight for the Hazardous Materials programme and lack of adherence to maintenance procedures for hydraulic servicing, were substantially contributing factors.



Wrecked Kurdistan Government/Sulaymaniyah Traffic Directorate MD530F (369FF) 0204 on its side after it crashed alongside the smashed remains of a vehicle from which it had been sent to recover the deceased driver on August 29. Sulaimaniyah Traffic Directorate

D: Jul 10

N: Sudanese Air Force

T: Baykar Bayraktar Akinci

The paramilitary Rapid Support Forces (RSF) in Sudan announced that they had used anti-aircraft fire to bring down this UCAV over El Fasher, North Darfur. RSF spokesperson Al-Fateh Qarashi said it had been brought down after purportedly carrying out a series of airstrikes on civilian areas, including residential zones, hospitals, schools, and camps for internally displaced persons in Zamzam, Kuma and Mellit.

D: Aug 21

N: US Air Force

T: C-5M Super Galaxy

S: 87-0039

Shortly after departure from Dover Air Force Base, Delaware, during the initial climb out, the crew declared an emergency at 1737hrs local time after shutting down the No 1 engine due to loss of fluid. The aircraft, callsign 'RCH2004', returned to Dover where it made a safe emergency landing without further incident. There were no injuries to the 24 personnel on board.

D: Aug 24

N: UK Home Office/Tekever Ltd

T: Tekever AR5 Evolution Mk 2.3

S: G-TEKE

This unmanned surveillance drone was damaged when it caught fire shortly before 1600hrs while being transported in a vehicle which pulled over onto the hard shoulder of the westbound carriageway of the M20 motorway between Junction 13 (Folkestone) and J12 (Cheriton). Fire services then extinguished the flames. The UAV is normally based at Lydd airport monitoring migrant crossings of the English Channel from France. It had reportedly earlier come down in the sea and was being transported by road after being recovered.

D: Aug 24

N: Russian Air Force

T: MiG-29A

S: '15 Red'

While being towed out of Yerevan-Erebuni Air Base a coupling on the towbar failed at approximately 0215hrs, allowing the aircraft to roll back unhindered. It struck an iron pole on Arshakunyats Avenue, ran through a fence and then fell backwards onto a lower area. Damage did not appear to be serious and the aircraft tow was later resumed. Although unconfirmed, it is thought that the aircraft may have been a decommissioned airframe that had already been withdrawn from use.

D: Aug 28

N: Polish Air Force

T: F-16C

S: 4056

The aircraft, part of the Tiger Demo Team, was conducting a practice display routine at Radom Air Base in preparation for the Radom Airshow 2025 the following weekend. The aircraft entered a loop at low altitude but exited the manoeuvre too low and was destroyed when it crashed onto runway 07 and exploded in flames at approximately 1925hrs local time. The pilot, Major Maciej 'Slab' Krakowian, did not eject and was killed.

D: Aug 29

N: Kurdistan Government/ Sulaymaniyah Traffic Directorate

T: MD530F (369FF)

S: 0204

After departing from Sulaymaniyah International Airport on a mission to recover the deceased driver of a car that had fallen down a cliff the helicopter was destroyed when it crashed due to a technical failure while attempting to land near Azmar Mountain, Sulamaniiyah. Both crew members, the helicopter's captain, Brigadier Hussein Faizullah and his co-pilot, were injured and taken to Anwer Sheikha Hospital in Sulamaniiyah, where they were reported to be in good condition.

D: Aug 29

N: EMERCOM Russia/ Khabarovsk Aviation Rescue Centre

T: Mi-8MTV-1

The helicopter was delivering volcanologists to the Kudryavy volcano on Iturup Island, part of the southern group of the Kuril Islands in Russia's Sakhalin Region but made a hard landing at the foot of the volcano, rolled over and was damaged beyond repair. Two of those on board were injured but suffered only minor bruises.

D: Aug 30

N: Russian Air Force

T: 2 x Mi-8

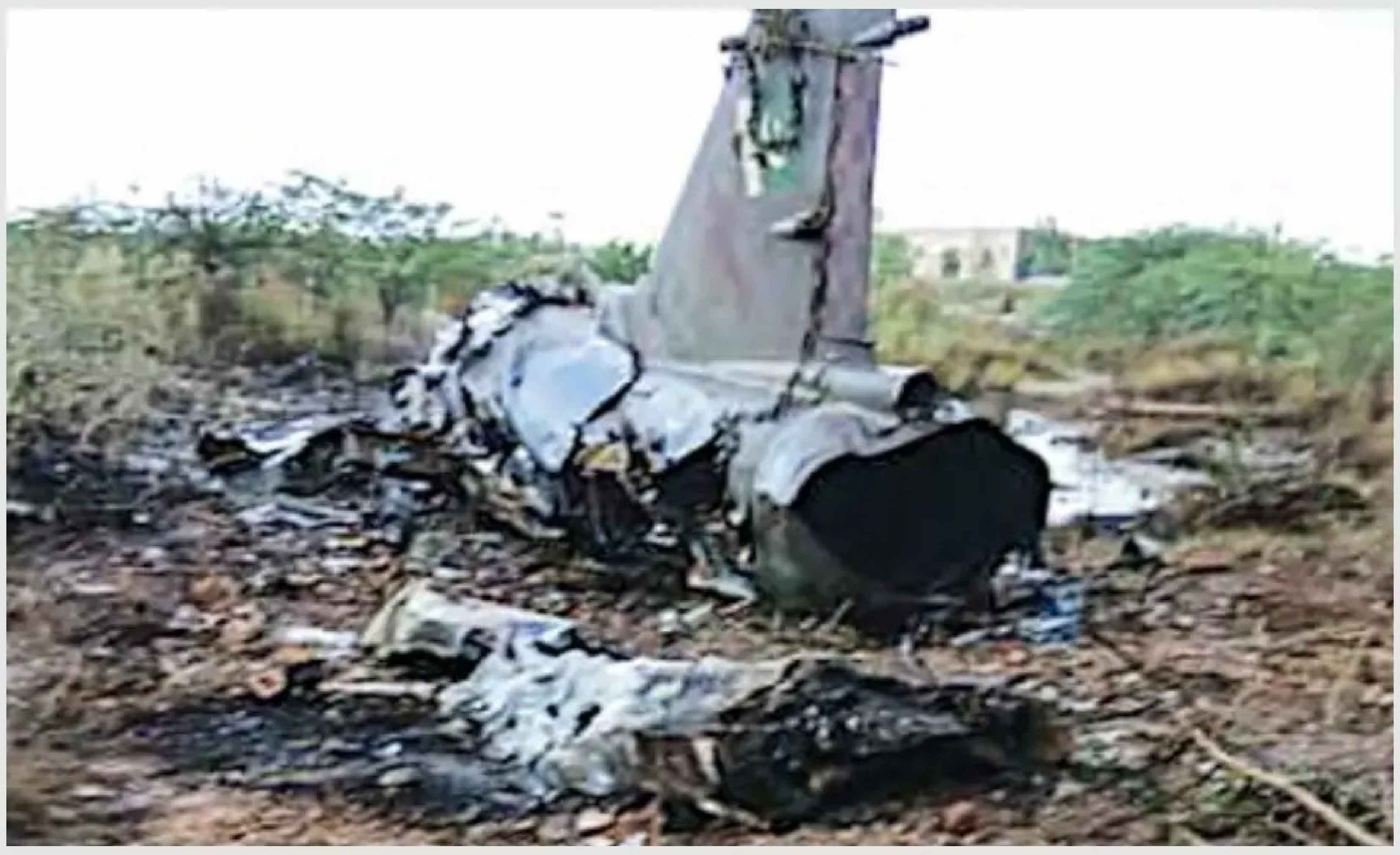
These two helicopters were struck during a drone attack by the 'Prymary' (Ghost) special unit of the Main Intelligence Directorate of the Ministry of Defence of Ukraine on the Russian military airbase at Gvardeyskoye-Hvardiiske near Simferopol, in occupied Crimea. At least one of the two appears to have been damaged beyond repair while the other sustained some shrapnel damage.

D: Sep 1

N: Pakistan Aemy

T: Mi-17

While attempting to make a test landing at approximately 1000hrs



Burnt out wreckage of Pakistan Air Force/32nd Tactical Air Wing/27 'Zarrar' Squadron Mirage 5 ROSE III in fields near 104 Chak, Sargodha, after it had crashed on September 9 shortly after take-off from PAF Base Mushaf, Sargodha, for a routine training flight. via Twitter

Attrition Report

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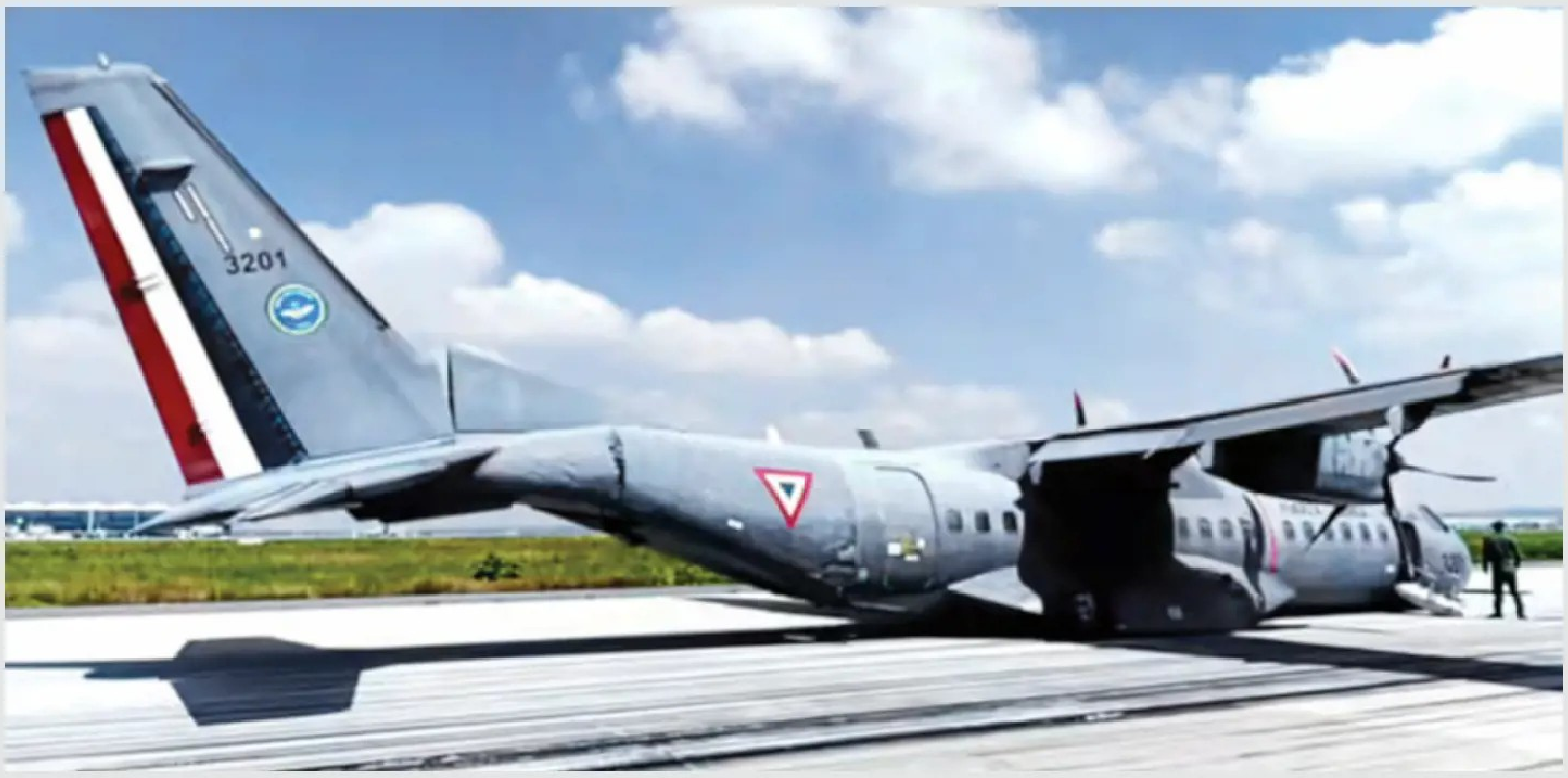


Badly damaged Mexican Air Force/Escuadrón Aéreo 301 C295M FAM 3201 on its belly at Base Aérea Militar No 1, Santa Lucia/Mexico City-Felipe Ángeles International Airport after a heavy emergency landing on September 9. *via Twitter*

local time on a new helipad in a mountainous tourist area near the Thore area of Chilas, Diamer district, Gilgit-Baltistan, Pakistan, about 7½ miles (12kms) away from Thakdas Cantonment, the helicopter was destroyed in a crash following a technical failure. All five on board were killed. They were identified as Major Atif, who was the pilot in command, Major Faisal, the co-pilot, flight engineer Naib Subedar Maqbool, and crew chiefs Havaldar Jahangir and Naik Amir.

D: Sep 2
N: Japan Ground Self Defense Force/1st Division
T: Parrot ANAFI II

After flying for 15 minutes during a training session in the JGSDF East Fuji Manoeuvre Area in Shizuoka Prefecture, the display on the control tablet computer of this UAV blacked out at approximately 1100hrs local time, resulting in it becoming impossible to maintain control. A search was then initiated to find the missing drone, which would only have an estimated maximum endurance of a further ten minutes from the time control was lost. It was discovered within the East Fuji Training Area shortly after 1500hrs on September 4 although it was not reported whether or not it was badly damaged.

D: Sep 3
N: Russian Air Force
T: Il-76MD
S: RF-76612

A few minutes after take-off at 0625hrs local time from Krasnoyarsk-Yemelyanovo International Airport for a proposed flight to Ulan-Ude Vostochny Airport, the aircraft encountered engine problems, with a fire warning indication for the No 1 engine. The engine was shut down and the aircraft diverted to the closer Krasnoyarsk-Cheremshanka Airport, where the crew observed that there were still flames coming from the No 1 engine while on approach. During the emergency landing at 0640hrs the Ilyushin overran the short runway and came to rest with the nosewheel sunk in the soft grass about 100ft (30m) beyond it. The airfield is normally only used by light aircraft and it is thought the runway was not long enough for a type as large as the Il-76. The aircraft was reported not to have sustained any serious damage.

D: Sep 4
N: Sudanese Air Force
T: Baykar Bayraktar Akinci

Paramilitary Rapid Support Forces (RSF) brought down this high-altitude long-endurance unmanned combat aerial vehicle after it bombed the Manawashi market in South Darfur, killing at least two people and seriously injuring two others. Following the attack, RSF anti-aircraft units targeted the drone, causing an in-flight fire before it crashed into a residential area in Mershing, about 9 miles (15km) away, with no further casualties.

D: Sep 7
N: Indonesian Air Force
T: CN-235-220MPA
S: AI-2318

While landing at Oksibil Airport, the aircraft encountered a technical problem and the starboard main undercarriage collapsed. The crew members were unhurt and damage to the CN-235 was said to be minor.

D: Sep 9
N: Mexican Air Force/Escuadrón Aéreo 301
T: C295M
S: FAM 3201

During a training flight from Base Aérea Militar No 1, Santa Lucia/Mexico City-Felipe Ángeles International Airport, the aircraft made several touch and gos, during one of which the undercarriage was damaged. It returned for an emergency landing at approximately 1032hrs local time with the undercarriage retracted but landed heavily on its belly on runway 04R, then bounced, breaking the rear fuselage just forward of the tail before coming to rest. No injuries were reported to the three crew but the aircraft sustained substantial damage.

D: Sep 9
N: Pakistan Air Force/27 'Zarrar' Squadron
T: Mirage 5EF ROSE III

The aircraft was destroyed when it crashed and caught fire in fields near 104 Chak, Sargodha, shortly after take-off from PAF Base Mushaf, Sargodha, for a routine training flight. The pilot ejected safely using a Martin-Baker PRM4 ejection seat but was injured. Martin-Baker stated that this brought the number of lives saved by its ejection seats to 7,798.

D: Sep 9
N: Air Force of Zimbabwe/6 Squadron
T: SIAI-Marchetti SF-260

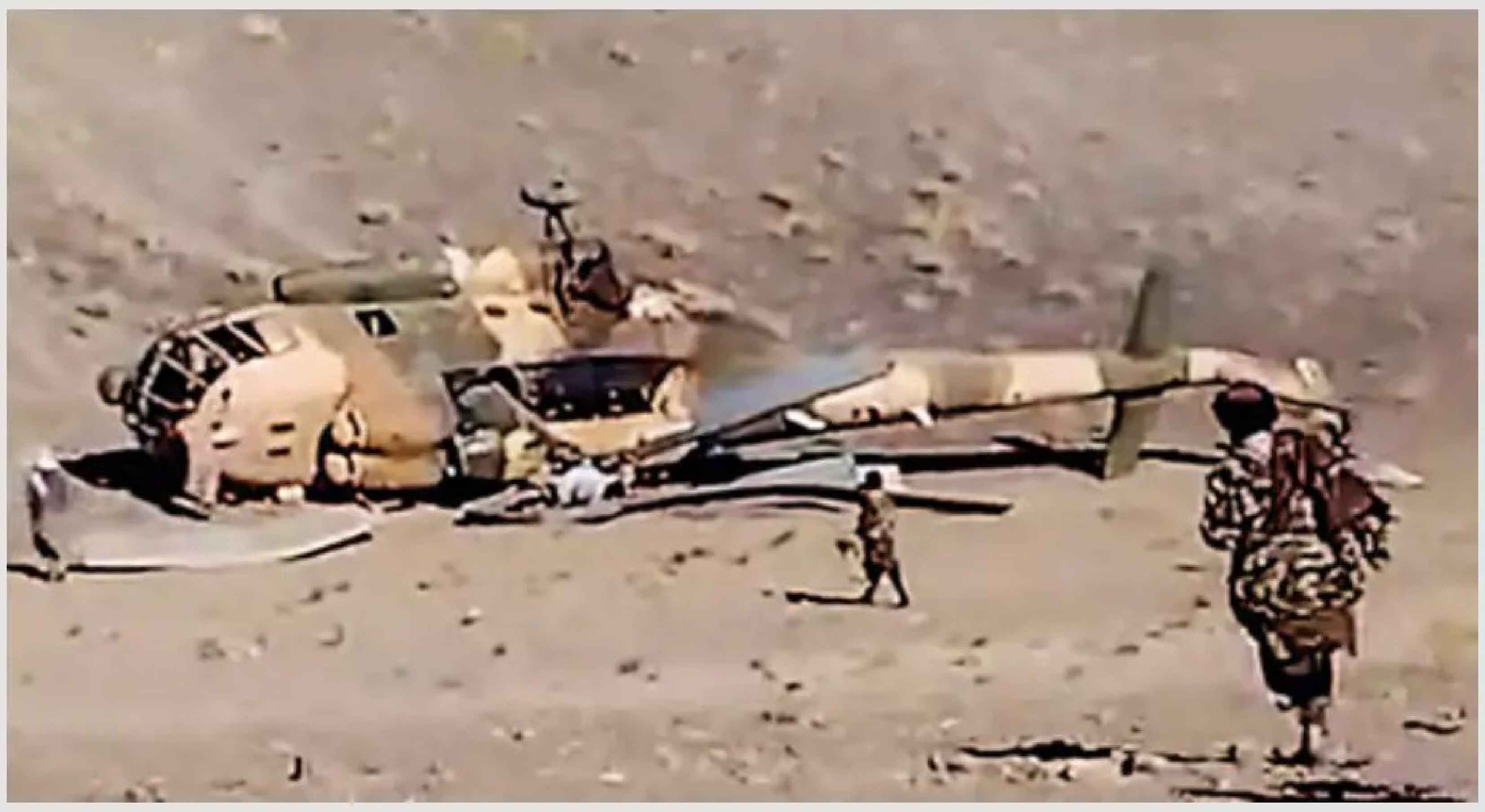
This aircraft was destroyed when it crashed following a technical failure during the initial climb out for a mid-morning training mission from Josiah Tungamirai Air Force Base, Gweru. Both crew members were killed. They were later identified as instructor Squadron Leader Walter Chidyausiku and student pilot Officer Cadet Lennox Takudzwa Alumenda.

D: Sep 10
N: Royal Navy/845 Naval Air Squadron
T: Merlin HC4
S: ZJ128 'M'

While flying over Kagoshima Bay, 8 miles (13km) west of Kanoya Air Base, Japan, at 1440hrs local time, the port side cockpit windshield, measuring 4ft 11in x 8ft 2in (1.5m x 2.5m) detached and fell into the sea. No injuries were reported and damage to the helicopter was only minor. The Merlin had transported an F-35B pilot to Kagoshima Airport to fly F-35B ZM150 back to the aircraft carrier HMS *Prince of Wales* (R09) and was returning to the ship at the time of the incident. The F-35B had been stranded at the airport since diverting there on August 10 (see *Attrition*, October) but with repairs completed it was ready to fly out.

D: Sep 10
N: Afghan Air Force
T: Mi-17

Following a technical malfunction, the helicopter crashed and rolled over when it struck a mountain in Ghor Province, severing the main rotors before coming to rest on its port side. All occupants survived, but the helicopter was extensively damaged. The Mi-17 was en route to Tulak district at the time carrying several Taliban officials.



Following its crash on September 10, an Afghan Air Force Mi-17 lies on its side on a mountain in Ghor Province. *via Twitter*

Remains of one wing of a Sudanese Air Force Baykar Bayraktar Akinci being held up by Paramilitary Rapid Support Forces (RSF) personnel after their air defence units brought it down on September 13 over the town of Al Khoei in West Kordofan. RSF

D: Sep 11
N: Ukrainian Air Force/39th Tactical Aviation Brigade
T: Su-27 Flanker

During a combat operation the aircraft was destroyed when it crashed near Zaporizhzhia Oblast, Ukraine, at 1330hrs local time. The pilot, Mayor Oleksandr Mykolayovych Borovyk, was killed. The Russian Air Force claimed to have shot it down and shrapnel damage to the remains of the tail tended to support this claim.

D: Sep 11
N: Ukrainian Air Force/7th Tactical Aviation Brigade
T: Su-24M

During a training mission with live ammunition, the aircraft was heading for the Povursk Training Range in Kovel Raion when it experienced an un-commanded ordnance release while flying over the village of Kopyllya, Lutsk Raion, Volyn Oblast. The unspecified munition fell on and destroyed a private residence, starting a fire, although fortunately no one on the ground was injured as the house was unoccupied at the time. An investigation has been launched to determine the cause of the incident.

D: Sep 13
N: Sudanese Air Force
T: Baykar Bayraktar Akinci

Paramilitary Rapid Support Forces (RSF) air defence units brought down this high-altitude long-endurance unmanned combat aerial vehicle over the town of Al Khoei in West Kordofan. The UCAV was destroyed. Analysis of images of various distinctive parts of the wreckage, including the nosecone, fuselage sections, wings and control panels all confirm that the type has been identified correctly, This was the third known Akinci downed by the RSF. Previous losses of the type in Sudan were on July 10, 2025 and on September 4 (see above reports on those losses).

D: Sep 17
N: Japan Air Self-Defense Force/302nd Hikotai
T: F-35A Lightning II
S: 09-8718

During a training sortie from Misawa Air Base, the pilot reported flight control system problems when 192 miles (310km) northwest of the airfield. The aircraft made a safe emergency landing at Aomori Airport, escorted by a second F-35A (19-8725), at 1244hrs local time. It came to a halt on a taxiway having sustained only minor damage but resulted in the runway being closed for 12 minutes, slightly delaying two commercial flights, the pilot was unhurt. After some maintenance work, the aircraft was able to depart at 2100hrs the following day to return to Misawa.

D: Sep 17
N: US Army/4-160th Special Operations Aviation Regiment
T: MH-60M Black Hawk
S: 10-20269

The helicopter crashed during a routine training mission at approximately 2045hrs local time and was destroyed by a post-crash fire in a wooded area near Summit Lake, close to near Joint Base Lewis-McChord,Washington State. The crash sparked a small wildfire that had grown to one acre by the following morning. One body was recovered from the crash site but rescue efforts had to be discontinued due to the ongoing fire, However, the other three crew members are also believed to have died in the crash.

D: Sep 19
N: Japan Air Self-Defense Force/Niigata Kyunantai (Rescue Squadron)
T: BAe U-125A (BAe125-800SM)
S: 82-3008

During a proficiency training flight at Niigata Airport at 1152hrs local time the aircraft declared an emergency and veered off the left side of the runway while landing. It then slid sideways on the grass for some distance before coming to rest. No injuries were reported to the five on board and damage to the airframe appeared to be minimal. Two runways were closed for four hours during recovery operations, causing cancellation of 16 commercial flights to and from the airport.

D: Sep 21
N: Russian Border Guard Service
T: Mi-8AMTSh

This helicopter was destroyed on the ground at the former Border Guards training base at Shkolnye, Crimea, by a Ukrainian Main Directorate of Intelligence drone attack.

D: Sep 22
N: Russian Naval Aviation
T: 2 x Beriev Be-12 Chaika

A video feed from Ukrainian drones showed them attacking these two amphibians which were sitting idle at a location 25 miles (40km) west of Simferopol, Crimea. It is unclear whether or not they were in storage or some of the few remaining operational examples remaining in service. Although the drone footage confirms that both were hit, the extent of damage to the airframes could not be determined.

D: Sep 23
N: Republic of Korea Air Force/19th Fighter Wing
T: KF-16

During take-off at 1638hrs local time from Jungwon Air Base, Chungju, the aircraft skidded off the runway. The pilot was unhurt but the extent of damage to the aircraft could not immediately be confirmed. No further details have been reported.

D: Sep 24
N: Ukrainian Army Aviation
T: Mi-8

A 9K723 Iskander-M cluster munition ballistic missile strike at 1258hrs local time on Kamyanka Aerodrome, on the northern outskirts of the city of Dnipro (Dnepropetrovsk), destroyed two hangars, along with this helicopter, which was parked in one of them. An MIM-104 Patriot had unsuccessfully attempted to intercept the missile. The strike, which caused much of the airfield to be engulfed in flames. had been coordinated by a Russian reconnaissance UAV orbiting the city.

Additional material from: Scramble/Dutch Aviation Society and Asagiri Yohko.

Japan Air Self-Defense Force/Niigata Kyunantai (Rescue Squadron) BAe U-125A (BAe125-800SM) 82-3008 after it slid off the runway on landing at Niigata Airport on September 19.

Next Issue

SKYLINE AVIATION
NX139LZ

An L-39ZO returns from a mission at Leeuwarden Air Base. Clearly visible under the fuselage is the L3Harris MX-15 *Skyline Aviation*

Dutch Delight

The role of contractors in defence is a proven concept – and in the Netherlands, Dutch contract air provider AEC Skyline has been playing a crucial role in this area over decades. Frank Visser spoke with Jasper Raaijmakers of AEC Skyline's aviation division, about the European contractor field

• CFB Greenwood new home of the Kingfisher

2025 has been a pivotal year for Canadian fixed-wing search and rescue operations as they introduced their new Airbus CC-295 Kingfisher across the country. Chris Melaisi visited 413 Transport and Rescue Squadron of 14 Wing, CFB Greenwood, to learn more about the new SAR platform

• Russia's Shadowy VIP aircraft

The aircraft of the Special Flight Unit and Flight Unit 223 of the Russian Aerospace Forces are detailed by Babak Taghvaee

NEXT ISSUE

The November edition of *AirForces Monthly* is on sale from November 20, 2025

Below left: ***'TUSKER 506', Airbus CC-295 Kingfisher 295506, flying over Nova Scotia's coastline on the first-ever sortie of the aircraft with a 413 Squadron crew from CFB Greenwood*** *Chris Melaisi*

Below right: ***One of only four Western aircraft acquired by the Special Flight Squadron of the Russian Ministry of Defence, Falcon 7X (RA-09007) entered service under President Medvedev and was used frequently during his tenure*** *Keyvan Tavakkoli*

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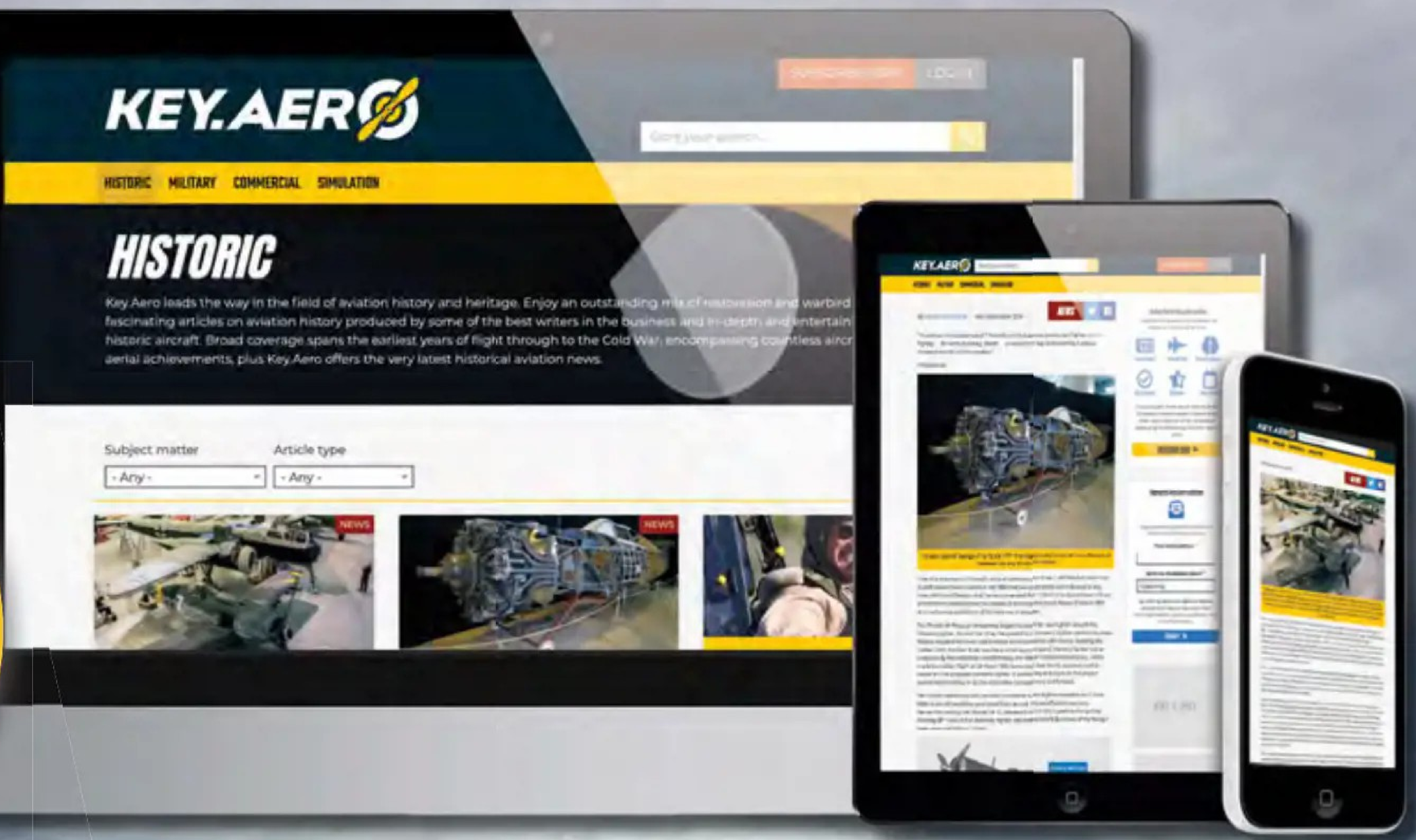
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